

# EXHIBIT

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Page 1

1 UNITED STATES DISTRICT COURT  
2 FOR THE EASTERN DISTRICT OF TENNESSEE  
3 GREENEVILLE DIVISION  
4 - - - - - :  
5 :  
6 ULTIMA SERVICES CORPORATION, :  
7 :  
8 Plaintiff, : CASE NO.  
9 :  
10 vs. : 2:20-cv-00041  
11 :  
12 U.S. DEPARTMENT OF :  
13 AGRICULTURE, et al., :  
14 :  
15 Defendants. :  
16 :  
17 - - - - - :  
18

10  
11 DEPOSITION OF JONATHAN GURYAN  
12  
13 DATE: April 27, 2022  
14 TIME: 9:30 a.m.  
15 LOCATION: Via Zoom Videoconference  
16  
17 REPORTED BY: Constance H. Rhodes  
Reporter, Notary

22 Job No. CS5185100

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1	<b>A P P E A R A N C E S</b>	
2		1        P R O C E E D I N G S
3	On behalf of Plaintiff:	2   WHEREUPON,
4	MICHAEL ROSMAN, ESQUIRE	3        JONATHAN GURYAN
	MICHELLE SCOTT, ESQUIRE	4   called as a witness, and having been first duly
5	Center for Individual Rights	5   sworn, was examined and testified as follows:
	1100 Connecticut Avenue, Northwest	6        EXAMINATION BY COUNSEL FOR DEFENDANTS
6	Suite 625	7   BY MS. DINAN:
	Washington, DC 20036	8        Q   Good morning. My name is Christine
7	Rosman@cir-usa.org	9   Dinan. I'm an attorney with the Department of
8		10   Justice and I represent the defendants in this
9	On behalf of Defendants:	11   matter. This deposition is being taken pursuant
10	CHRISTINE T. DINAN, ESQUIRE	12   to the Federal Rules of Civil Procedure.
	JULIET GRAY, ESQUIRE	13        Dr. Guryan, can you please state and spell
11	United States Department of Justice	14        your full name for the record?
	Employment Litigation Section	15        A   Jonathan Guryan, J-O-N-A-T-H-A-N,
12	150 M Street, Northeast	16        G-U-R-Y-A-N.
	Washington, DC 20002	17        Q   I understand you have been deposed
13	(202) 598-1600	18        before; is that right?
	Christine.dinan@usdoj.gov	19        A   That's correct.
14	* * * * *	20        Q   Approximately how many times have you
15		21        been deposed?
16		22        A   I think approximately 25 to 30 times.
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22		
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22	(*Exhibits attached to transcript.)	

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1 case in which in your opinions have been, I would 2 say, excluded or stricken or limited by the court? 3 A Yes. 4 Q Have you ever been an expert in a case 5 involving the Small Business Administration's 8(a) 6 business development? 7 A I believe so. 8 Q Are you familiar with the Small Business 9 Administration's 8(a) business development 10 program? 11 A I have made myself familiar with it over 12 the course of working on this case. 13 Q What did you do to become familiar with 14 it while working on the case? 15 A Well, I had conversations with counsel, 16 and then I also reviewed information on the web on 17 the -- about the -- that described the rules of 18 the program. And then I read the filings in this 19 case. 20 Q Which filings in the case have you read? 21 A I read a copy of the complaint and then 22 I've also -- maybe this is not a filing, but I've	1 the contracting right, but they contract with the 2 Small Business Administration and designate some 3 contracts to be 8(a) contracts that would give 4 preferences to small businesses that are deemed to 5 be 8(a) eligible to win those contracts. 6 My understanding is that there are certain 7 groups of businesses that become eligible, are 8 presumed eligible, and then other -- but there are 9 other ways to become eligible to participate in the 10 8(a) program. 11 Q Do you have any opinions about the 8(a) 12 program? 13 MR. ROSMAN: Objection to the form of the 14 question. You may answer. 15 THE WITNESS: Are you asking if I am 16 offering an opinion as an expert in this case about 17 the 8(a) program? 18 BY MS. DINAN: 19 Q Sure. Let's go with that. 20 A I'm -- I don't -- I'm not offering any 21 opinions on any legal matters because I'm not a 22 legal expert, and I'm -- I'm not -- I don't plan
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1 read descriptions of it in other expert reports. 2 Q The other experts in this case? 3 A Yes. 4 Q You said you read materials on the web. 5 Do you recall what those websites were? 6 A I don't think I could tell you the -- 7 like the web address, but they were -- I believe 8 they were websites, government websites, from the 9 Small Business Administration that describe the 10 8(a) program and the process of different ways to 11 become, you know, registered for the 8(a) program 12 and the rules. 13 Q So what is your understanding of the 14 8(a) program? 15 A My understanding of the 8(a) program is 16 that it's a program that is intended to increase 17 the share of government contracting dollars that 18 go to small businesses, in particular small 19 businesses that are economically disadvantaged -- 20 economically and socially disadvantaged, I 21 believe; that the different government agencies 22 can -- I'm not sure I'll get the exact details of	1 to offer any opinion about the 8(a) program other 2 than to the extent that it informs the opinions 3 that I've laid out in my report. 4 Q I understand you are not offering an 5 expert about the 8(a) program. Do you have any 6 personal opinions about the 8(a) program? 7 A None that I intend to offer in this 8 case. 9 Q Okay. When were you first contacted by 10 the plaintiff about getting involved in this case? 11 A I believe it was either January or 12 February of this year. 13 Q Of 2022? 14 A Yes. 15 Q And what were you asked to do? 16 A I was told there would be expert reports 17 filed by defense, and I was asked to review those 18 expert reports and to provide my opinion of the 19 methods used in those reports and of the 20 conclusions that those -- and opinions that those 21 experts offered. 22 Q Were you contacted before or after

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<p>1     A   He helped in the drafting of parts of 2   it. I write the first pass of everything, and 3   then he sometimes will edit and revise. But all 4   of the opinions in the report are mine.</p> <p>5     Q   Other than Dr. Reck -- you said you had 6   a team at Charles River Associates. Do you recall 7   anyone else who worked on this report with you?</p> <p>8     A   Yeah. Sorry if I wasn't clear.</p> <p>9   Typically, when I work on cases I put together a 10   team. In this case I believe it was just me -- 11   just Dr. Reck.</p> <p>12   Q   And is Dr. Reck a consultant with 13   Charles River Associates?</p> <p>14   A   He is a full-time employee of Charles 15   River Associates. He has his PhD in economics and 16   has worked at Charles River Associates his -- and 17   maybe one other similar firm for his entire 18   career.</p> <p>19   Q   What is his PhD in?</p> <p>20   A   Economics.</p> <p>21   Q   Did you use any software other than a 22   word processing program to create the report?</p>	<p>1     A   Sorry. I didn't hear the beginning of 2   the question. Can you say it again?</p> <p>3     Q   Did you perform any original tests or 4   statistical analysis on the data that was relied 5   upon by defendant's experts in their reports?</p> <p>6     A   No, I don't believe so. With Mr. Chow's 7   data I did look through the dataset, and, as I 8   noted in my report, found that all of the -- that 9   there's a variable that is called something like 10   award or IDV. And so I assessed whether there 11   were any records that had a value other than award 12   or IDV. So that wasn't on a regression analysis, 13   but that did require doing a calculation I 14   suppose.</p> <p>15           So I guess that -- taking your question 16   literally and precisely, that was the one 17   calculation or statistical analysis that I did. But 18   other than that I don't believe so.</p> <p>19   Q   And to your knowledge did Dr. Reck 20   perform any original test or statistical analysis 21   on the data that was relied upon by defendant's 22   experts?</p>
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<p>1     A   Well, I reviewed documents in -- that 2   were PDFs, so I used, I think, Adobe or some other 3   PDF viewer to read those documents. I reviewed 4   data, and so I used Excel and Stata to look at the 5   data. But I didn't perform any statistical 6   analyses or calculations on which I based my 7   opinion.</p> <p>8     Q   To your knowledge, did Dr. Reck perform 9   any statistical analyses or calculations when 10   working on this report?</p> <p>11   A   I don't believe so.</p> <p>12   Q   I think I know the answer, but I'll ask. 13   In this case did you collect any data of your own?</p> <p>14   A   No.</p> <p>15   Q   Did Dr. Reck collect any data of his own 16   in working on this report?</p> <p>17   A   I don't believe so, no.</p> <p>18   Q   And as you just testified, did you 19   perform any original tests or statistical analysis 20   on the data that was relied upon by defendants' 21   experts in this report. I believe you said that 22   you did not; is that correct?</p>	<p>1     A   Again, other than what I just said, he 2   did the same counting tabulation that I did of 3   Mr. Chow's data, and we also wanted to see whether 4   we had the data that Dr. Wainwright and Mr. Chow 5   had used. And so we did some looking at the 6   datasets, which does involve doing some -- 7   calculating some statistics as you look at a 8   dataset and try to figure out what's in it and 9   whether it matches the description in the report.</p> <p>10           So we did some work along those lines.</p> <p>11   Q   But you mentioned you never ran a 12   regression analysis on any of that data; is that 13   correct?</p> <p>14   A   I did not.</p> <p>15   Q   You mentioned that you used Stata in 16   looking at some of the data. Can you just -- it 17   may be what you just described, but just to be 18   clear, for what purpose did you use Stata in 19   preparing this report?</p> <p>20   A   Both to open up a dataset that was 21   provided in Stata format and to do some of the 22   exploratory looking at the data to try to see</p>

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<p>1 whether we had the full dataset that was described  2 in the two different reports and to do the  3 assessment of that variable that I mentioned from  4 Mr. Chow.</p> <p>5 Q Have you used Stata on any other expert  6 reports that you've produced to your best  7 recollection?</p> <p>8 MR. ROSMAN: Objection to the form of the  9 question. You may answer.</p> <p>10 THE WITNESS: Yes.</p> <p>11 BY MS. DINAN:</p> <p>12 Q For what purposes have you used Stata in  13 other expert reports?</p> <p>14 A So sometimes I and my team use Stata and  15 sometimes we use another program which is similar  16 called SAS. Having not reviewed the details of  17 other reports I've written over the years in  18 preparation for this deposition, I'm not sure I  19 can say specifically which statistical program we  20 used for which analysis. But I do use Stata  21 regularly both in my work as an expert and in my  22 research and in teaching a class on statistics.</p>	<p>1 MR. ROSMAN: Christine, could you just  2 identify what you're characterizing as the first  3 section?</p> <p>4 MS. DINAN: Sure. Beyond the background  5 and qualifications and summary, so getting into  6 paragraph 5 on page 7.</p> <p>7 MR. ROSMAN: Thank you.</p> <p>8 MS. DINAN: The first substantive portion.</p> <p>9 THE WITNESS: Okay. So we are on section  10 five, which is titled "Disparities and  11 Discrimination are not the Same Thing."</p> <p>12 BY MS. DINAN:</p> <p>13 Q Correct.</p> <p>14 A I'm sorry. I've lost what the question  15 is. Could you just repeat the question?</p> <p>16 Q Sure. In the first section of your  17 report you state that disparities and  18 discrimination are not the same thing. Can you  19 explain what you mean by that?</p> <p>20 A Well, again, I would just -- just  21 clarify that there is substance of the report  22 before we get to section five, some of which is a</p>
<p>1 Q When you use it in other expert reports,  2 would that include using it to open up datasets  3 and look at data as you've described? Well, I'll  4 ask that question first.</p> <p>5 A I certainly have done that in the course  6 of working on other expert reports.</p> <p>7 Q When you worked on other expert reports  8 have you used Stata or SAS I think you said? Is  9 that S-A-S-S?</p> <p>10 A S-A-S.</p> <p>11 Q S-A-S -- to run any statistical analyses  12 such as regressions?</p> <p>13 A Yes.</p> <p>14 Q Now, I'd like to start going through  15 your report, try to sort of go chronologically  16 section by section. As I understand it, you start  17 with some general criticisms and then raise some  18 concerns specific to each of our expert's reports.</p> <p>19 In the first section of your report you  20 state that disparities and discrimination are not  21 the same thing. Can you explain what you mean by  22 that?</p>	<p>1 summary of my opinions. Some of it is my  2 background.</p> <p>3 But in this section that is section five,  4 which is titled "Disparities and Discrimination are  5 not the Same Thing," you know, I attempt to explain  6 what I mean by that. So I'll incorporate everything  7 that's in that section into my answer. But what  8 I -- in addition to that, what I mean is that a  9 disparity is a difference in some outcome between  10 two groups.</p> <p>11 If there's a difference the outcomes, are  12 disparate. And those differences can be caused by  13 discrimination or they can be caused by other  14 things. And so the existence of a disparity does  15 not necessarily mean that that disparity was caused  16 by discrimination.</p> <p>17 Q So in your testimony you talked about  18 causation. Here it says that disparities and  19 discrimination are not the same thing. Is your  20 point there that there is not necessarily a causal  21 relationship, or are you trying to say something  22 different?</p>

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<p>1 caused by, and you list several things.</p> <p>2 A I did not run -- as we stated earlier, I</p> <p>3 did not run statistical tests myself. My point</p> <p>4 here is that if one is trying to test for</p> <p>5 discrimination one must rule out factors other</p> <p>6 than discrimination before drawing a conclusion</p> <p>7 that discrimination is the reason for disparity.</p> <p>8 If one is trying to test for</p> <p>9 discrimination in a particular market or over a</p> <p>10 certain recent and current time period, one must</p> <p>11 also rule out factors other than discrimination in</p> <p>12 that market and over that recent and current time</p> <p>13 period.</p> <p>14 Q Right. But my question is specific to</p> <p>15 this case. It sounds like you are saying it could</p> <p>16 be a possibility that one of these factors is</p> <p>17 involved, but you haven't tested so you can't be</p> <p>18 sure that one of these factors was the cause of</p> <p>19 the disparities identified by Dr. Wainwright; is</p> <p>20 that correct?</p> <p>21 A Not exactly. My point is that</p> <p>22 Dr. Wainwright can't be sure. And because</p>	<p>1 alternative explanations other than</p> <p>2 discrimination.</p> <p>3 Q And to be clear, again, you're basing</p> <p>4 this -- what are you basing this conclusion on?</p> <p>5 Because you haven't run any tests on his data.</p> <p>6 MR. ROSMAN: Objection. It's been</p> <p>7 answered by prior testimony. You may respond.</p> <p>8 THE WITNESS: Again, the conclusion that</p> <p>9 I'm offering is that as a matter of proper</p> <p>10 methodology, as a matter of logic, it's</p> <p>11 inappropriate to draw a conclusion that</p> <p>12 discrimination caused the disparity without</p> <p>13 considering and testing for alternative factors</p> <p>14 other than discrimination.</p> <p>15 BY MS. DINAN:</p> <p>16 Q And you believe that Dr. Wainwright and</p> <p>17 Mr. Chow have failed to test for alternative</p> <p>18 factors?</p> <p>19 A In many of the analyses that they did --</p> <p>20 well, let's go and take them separately. In many</p> <p>21 of the analyses that Dr. Wainwright did, he didn't</p> <p>22 test for any nondiscriminatory factor at all.</p>
<p>1 Dr. Wainwright can't be sure based on the analysis</p> <p>2 that he did, it's inappropriate for him to</p> <p>3 conclude that his -- that based on his analysis</p> <p>4 that discrimination exists.</p> <p>5 Q Well, since you didn't run any tests of</p> <p>6 your own, what are you basing that conclusion on</p> <p>7 that Dr. Wainwright can't be sure?</p> <p>8 A The logic of testing for discrimination</p> <p>9 as I've described in my report as the National</p> <p>10 Academy of Sciences has stated is the proper way</p> <p>11 to do this, as other economists and social</p> <p>12 scientists who study discrimination have said is</p> <p>13 the proper way to perform these tests.</p> <p>14 Q And the same question for Mr. Chow's</p> <p>15 report? And I assume I know the answer but just</p> <p>16 to get it on the record. Did you run any tests to</p> <p>17 see whether any of these factors caused the</p> <p>18 disparities identified in Mr. Chow's report?</p> <p>19 A I didn't. And just as for</p> <p>20 Dr. Wainwright, my point is that neither did</p> <p>21 Mr. Chow. So it's inappropriate for him to draw a</p> <p>22 conclusion of discrimination without ruling out</p>	<p>1 There are some analyses in his report that hold</p> <p>2 constant some factors, some nondiscriminatory</p> <p>3 factors, which I have, you know, specified</p> <p>4 specifically in my report. And in those analyses,</p> <p>5 he does not consider all of the</p> <p>6 nondiscriminatory -- potential nondiscriminatory</p> <p>7 factors.</p> <p>8 In Mr. Chow's analysis he does not control</p> <p>9 for or consider any potential nondiscriminatory</p> <p>10 factor, and there are other flaws in his analysis</p> <p>11 that make the conclusions from that analysis</p> <p>12 unreliable as well that I have outlined in my</p> <p>13 report.</p> <p>14 Q Okay. And again, we'll discuss those in</p> <p>15 more specifics a little bit later.</p> <p>16 If you were to test to see whether any of</p> <p>17 these factors were the cause of the disparities, to</p> <p>18 use proper methodology as you have described it, how</p> <p>19 would you do so?</p> <p>20 A Well, it would depend on the specific</p> <p>21 context, and I would want to make sure I</p> <p>22 understood the particular market that I was</p>

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<p>1 studying before I laid out a particular -- a  2 particular test. But I would try to use one of  3 the newer methods that I've listed in this -- in  4 my report rather than try to run a regression and  5 hold things constant. Because as I've described  6 and as the National Academy of Sciences report  7 lays out, the method of trying to hold other  8 factors constant using data that, you know, an  9 analyst is likely to have in a dataset is flawed  10 because it's very unlikely that the analyst would  11 have data on all the other potential  12 nondiscriminatory factors that you would have to  13 hold constant.</p> <p>14 Q You said you've used one of the newer  15 methods. And again, I take it you are referring  16 to audit studies, correspondence studies, field  17 experiments and the like; is that correct?</p> <p>18 A Yes.</p> <p>19 Q Why didn't you do that here? Why didn't  20 you run one of those studies?</p> <p>21 A I was not asked to provide an opinion on  22 that matter. In this case I wasn't asked to</p>	<p>1 point of the paper is that it is an alternative  2 method based on economic theory that is not the  3 standard regression analysis that holds things  4 constant.</p> <p>5 Q What was the other method than the  6 regression analysis?</p> <p>7 A That analysis is based on the model  8 written by Gary Becker, who wrote a book called  9 The Economics of Discrimination, which is the  10 basis for much of the economic analysis of  11 discrimination.</p> <p>12 And that -- what the paper does is it  13 points out that if the form of discrimination that  14 Becker describes is happening in markets, it has  15 implications for the relationship between wage gaps  16 and particular percentiles of the racial prejudice  17 distribution. And so we gathered data measuring  18 racial prejudice and how it varied across different  19 areas of the country and how the distribution of  20 that prejudice varied and developed tests that are  21 based on the predictions of the theoretical economic  22 model.</p>
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<p>1 perform a study, and so I didn't put in the --  2 it's just not something that I did.</p> <p>3 Q Do you have an opinion as to what type  4 of disparities would exist if there were  5 discrimination in a particular marketplace?</p> <p>6 A That's too broad of a question to answer  7 in the specific.</p> <p>8 Q Have you ever done an expert report or  9 study that found that discrimination could be a  10 source of disparities identified in a particular  11 market?</p> <p>12 A Yes.</p> <p>13 Q Can you recall any examples of studies  14 or expert reports you're submitted on that?</p> <p>15 A I have published a study on the role  16 that racial prejudice plays in determining or  17 contributing to differences in pay between black  18 and white workers.</p> <p>19 Q And in that study did you use a  20 regression analysis or a different technique?</p> <p>21 A A different technique. There is a  22 regression that is run, but the method is -- the</p>	<p>1 Q Just to be clear, were you -- in that  2 study were you testing for the presence of  3 discrimination in a particular market or markets?</p> <p>4 A I was testing for the effects of racial  5 discrimination, racial prejudice, on differences  6 in pay in labor markets.</p> <p>7 Q Would you consider that discrimination  8 inside the market or outside the market?</p> <p>9 A Inside the labor market.</p> <p>10 Q And how did you differentiate between  11 any racial prejudice inside the labor market and  12 other differences outside the market?</p> <p>13 A So the way that I did it is as I  14 described. It's based on the predictions of this  15 economic model suggests that there will be  16 relationships -- if there is discrimination inside  17 the market of the form that is described by this  18 standard theory in economics, that there will be  19 relationships between wage gaps and particular  20 percentiles of the prejudice distribution that you  21 would not see if other factors other than  22 discrimination in that market of that form were</p>

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<p>1 to use sources like the current population survey      2 or the decennial census to test for      3 discrimination?</p> <p>4 A I agree with the conclusions of the      5 National Academy of Science's panel when they say      6 that datasets like the current population survey      7 and the decennial census -- and I would include      8 the American community survey -- are unlikely to      9 have in the datasets variables on all of the      10 factors other than discrimination that you would      11 need to hold constant in order for that test to      12 actually measure discrimination.</p> <p>13 Q Have you ever used the current      14 population survey or decennial census in any of      15 your studies when you've tested for      16 discrimination?</p> <p>17 A I used the current population survey to      18 measure wage gaps in the study that I talked about      19 earlier. I didn't only use the current population      20 survey, and I didn't run a regression of the type      21 that Dr. Wainwright ran to try to test for      22 discrimination. I combined that data with data</p>	<p>1 suggestion is that he should have done a different      2 type of analysis, not only used a different dataset.      3 My criticism is if one is going to try      4 to test for discrimination using a regression      5 analysis that tries to hold things constant, the      6 dataset has to all of the other nondiscriminatory      7 factors that could potentially be the reasons      8 for or contribute to the disparity. And the      9 dataset that Dr. Wainwright used doesn't have all      10 of those factors.</p> <p>11 I don't know that there is another      12 dataset that he could have used. It's possible,      13 but that's -- that's not the full scope of my      14 opinion.</p> <p>15 BY MS. DINAN:</p> <p>16 Q Other than the census surveys used by      17 Dr. Wainwright, including the ACS as well as the      18 SPO and APS -- I'm using acronyms here as      19 referenced in his report -- are you aware of any      20 other large data sources that include the race of      21 a business owner?</p> <p>22 A It isn't something I've looked into</p>
<p>1 that measured racial prejudice and how it varied      2 across different areas of the country to run the      3 types of tests that I described earlier.</p> <p>4 Q Did Dr. Wainwright use only the ACS in      5 his analyses as a data source?</p> <p>6 A In the analysis where he's using the      7 ACS, he used only the ACS to perform those      8 regression analyses. He also performed other      9 regression analyses on other datasets.</p> <p>10 Q What about Mr. Chow? To your knowledge      11 did he use either the CPS or decennial census in      12 his analyses?</p> <p>13 A No.</p> <p>14 Q What would you suggest is a better data      15 source that you believe Dr. Wainwright should have      16 used?</p> <p>17 MR. ROSMAN: Objection to the form of the      18 question. You may answer.</p> <p>19 THE WITNESS: I don't know of a specific      20 data source that I could name that Dr. Wainwright      21 could have used or should have used to perform a      22 regression analysis of the type that he did. My</p>	<p>1 recently, so off the top of my head I don't -- I      2 don't know. But I -- it's not something that I      3 searched for in preparation for this deposition.      4 So it's possible that there are, but I can't say      5 one way or the other.</p> <p>6 MS. DINAN: Okay. This is a good spot to      7 break. We've gone for about two hours now. So why      8 don't we do that.</p> <p>9 (Whereupon, a brief recess was taken.)</p> <p>10 BY MS. DINAN:</p> <p>11 Q Turning now to, I guess, section 6.1.1      12 of your report starting on page 12, under "Omitted      13 variable bias."</p> <p>14 Can you explain what your understanding of      15 what omitted variable bias is?</p> <p>16 A Well, in general, omitted variable bias      17 is what happens if you are running a regression      18 and you fail to control for some variable that is      19 both correlated with a variable of interest and      20 that also has its own independent effect on the      21 outcome variable. When that happens, and you omit      22 a variable as a control, it causes bias in your</p>
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<p>1 the economy as a whole?"</p> <p>2 Q I mean if what you're testing for is</p> <p>3 whether there is discrimination, as in this case,</p> <p>4 in contracting -- in the contracting across the</p> <p>5 country nationwide, do you believe that if you</p> <p>6 find disparities in a number of different markets</p> <p>7 and the results consistently show disparities that</p> <p>8 that would give you greater confidence in the</p> <p>9 validity of your results if what you're testing</p> <p>10 for is the presence of discrimination nationwide?</p> <p>11 MR. ROSMAN: Objection to form. You may</p> <p>12 answer.</p> <p>13 THE WITNESS: If you are trying to test</p> <p>14 for discrimination in contracting markets, then</p> <p>15 discrimination in non-contracting markets doesn't</p> <p>16 necessarily tell you whether there's discrimination</p> <p>17 in contracting markets.</p> <p>18 Separately, if you are trying to test</p> <p>19 for discrimination in contracting markets and you</p> <p>20 do a national analysis, if your goal is to assess</p> <p>21 whether there is discrimination in any part of the</p> <p>22 market nationally, that might be informative. But</p>	<p>1 pairs of people to go and apply for jobs, and the</p> <p>2 audit study would have a purpose of testing for</p> <p>3 discrimination of a certain type. So it might,</p> <p>4 say, test for discrimination on the basis of</p> <p>5 gender. If it did that there would -- you would</p> <p>6 get pairs of people, one male and one female, and</p> <p>7 you would train them to -- you'd give them similar</p> <p>8 resumes and you'd train them to interview in</p> <p>9 similar ways.</p> <p>10 And these people would be sent out to</p> <p>11 apply for jobs and interview for jobs, and the audit</p> <p>12 study would measure the rate at which the male</p> <p>13 versus the female auditors were either offered jobs</p> <p>14 or would go to the next round of the employment</p> <p>15 process.</p> <p>16 Q Have you used audit studies to test for</p> <p>17 discrimination before?</p> <p>18 A I personally have not, no.</p> <p>19 Q Are you aware of any audit studies that</p> <p>20 measure discrimination in contracting?</p> <p>21 A Not that I can think of off the top of</p> <p>22 my head.</p>
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<p>1 if your goal is to try to figure out whether there</p> <p>2 is discrimination in a particular part of the</p> <p>3 contracting market, then doing it nationally</p> <p>4 doesn't necessarily tell you that there is</p> <p>5 discrimination in one part of the contracting</p> <p>6 market as opposed to another.</p> <p>7 BY MS. DINAN:</p> <p>8 Q Next, I want to talk about some of the</p> <p>9 other methods that you've been talking about and</p> <p>10 you identify in your report that you believe are</p> <p>11 better ways to test for discrimination. So that's</p> <p>12 starting on page -- 6.2 starting on page 13.</p> <p>13 That's just for reference. That's where I'm</p> <p>14 getting these types of settings, but I'm not</p> <p>15 quoting from it.</p> <p>16 First, you mention as a potential method</p> <p>17 of study an audit study. How would you describe an</p> <p>18 audit study?</p> <p>19 A So there are different types of audit</p> <p>20 studies, but an example of an audit study would</p> <p>21 be, say, an audit study in a labor market.</p> <p>22 Whoever is running the audit study would train</p>	<p>1 Q I take it you did not conduct such a</p> <p>2 study here; is that right?</p> <p>3 A I did not.</p> <p>4 Q If you were to design such a study, how</p> <p>5 would you do so?</p> <p>6 A Well, I first would want to study the</p> <p>7 particular contracting market that I was designing</p> <p>8 a study for. If the way the contracting bidding</p> <p>9 works didn't involve face-to-face interactions, I</p> <p>10 probably wouldn't use an audit study. I would</p> <p>11 probably use something that was more like a</p> <p>12 correspondence study.</p> <p>13 Q Can you think of a way to use an audit</p> <p>14 study here where we're talking about contracting</p> <p>15 in a way that wouldn't involve submitting false</p> <p>16 information?</p> <p>17 A Again, if the particular contracting</p> <p>18 market that we're hypothetically trying to test</p> <p>19 for discrimination in doesn't commonly involve</p> <p>20 face-to-face interviews, then an audit study</p> <p>21 probably wouldn't be the right way to test for</p> <p>22 discrimination in that market. It would involve</p>

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<p>1 something more like a correspondence study.</p> <p>2 Q Okay. And if the particular market</p> <p>3 we're looking at is nationwide, again, would you</p> <p>4 think an audit study would be an appropriate</p> <p>5 vehicle to measure for discrimination nationwide?</p> <p>6 A If we're talking about a market where</p> <p>7 there is commonly face-to-face interactions as</p> <p>8 part of the selection process and so an audit</p> <p>9 study could be appropriate, then you could do an</p> <p>10 audit study that was nationwide.</p> <p>11 Q How would you describe that?</p> <p>12 A Well, again, I would want to -- first, I</p> <p>13 would need to know what was the market I was</p> <p>14 trying to test for discrimination in. But I would</p> <p>15 study that market and the way that people interact</p> <p>16 in that market and the process that is used that I</p> <p>17 was trying to test for discrimination in. And</p> <p>18 then I would do what I described earlier, where I</p> <p>19 would find pairs of -- I'd hire pairs of auditors,</p> <p>20 and I would try to train them to interact in that</p> <p>21 market in the same way and then measure the</p> <p>22 success rates that they had in their interactions</p>	<p>1 likely to come up in an interview. So if you could</p> <p>2 pick auditors who had very similar characteristics</p> <p>3 themselves where the only way they varied was based</p> <p>4 on their gender, for instance, you could train</p> <p>5 people to give answers in the same way but they</p> <p>6 would always be telling the truth about themselves.</p> <p>7 But again, I haven't designed an audit</p> <p>8 study myself, so this is, you know, not something</p> <p>9 that I have thought through all of the planning</p> <p>10 details of that level of specificity.</p> <p>11 Q Right. I guess what I'm trying to get</p> <p>12 at is if, as here, you are trying to measure</p> <p>13 discrimination in contracting markets, which</p> <p>14 requires you to -- you know, doing an audit study</p> <p>15 to have auditors submit bids, if they don't in</p> <p>16 fact intend to submit those bids or aren't</p> <p>17 business owners, that would be fraudulent. So I</p> <p>18 don't think it's feasible.</p> <p>19 A I don't know legally whether it would be</p> <p>20 allowed or not, and I don't know whether the</p> <p>21 government would have some scope to be able to run</p> <p>22 a study like that in a way that a private</p>
<p>1 in that market.</p> <p>2 Q Just to be clear, when you are training</p> <p>3 auditors, they are trained actors who aren't in</p> <p>4 fact applying for the job or bidding on a</p> <p>5 contract. Right? So they are necessarily playing</p> <p>6 a part in submitting false information.</p> <p>7 A I need to know the specifics of exactly</p> <p>8 the market that we are studying, but yes. I don't</p> <p>9 know if people who have run audit studies have</p> <p>10 figured out ways of doing it where there actually</p> <p>11 people who are not submitting false information.</p> <p>12 But yes, the common version of an audit study is</p> <p>13 with actors, and they are basing their information</p> <p>14 on, you know, other real people. But they are</p> <p>15 not -- they are acting to try to be exactly the</p> <p>16 same.</p> <p>17 I think if one was created, you could</p> <p>18 design an audit study where there was -- where you</p> <p>19 could limit the amount of deception where people</p> <p>20 were telling the truth about themselves, or you</p> <p>21 could pick auditors who had very similar</p> <p>22 characteristics on all the types of things that are</p>	<p>1 researcher wouldn't. I don't know. You are</p> <p>2 asking legal questions I don't know the answer to.</p> <p>3 Q Well, I'm just exploring the feasibility</p> <p>4 of using -- you've identified, you know, a</p> <p>5 superior method of testing for what we're testing</p> <p>6 for here.</p> <p>7 A And other things have been conducted --</p> <p>8 MR. ROSMAN: I don't think she's asked a</p> <p>9 question. Do you have a question?</p> <p>10 MS. DINAN: No. I do have a question on</p> <p>11 another topic, which I'll move on to.</p> <p>12 BY MS. DINAN:</p> <p>13 Q Moving on, you've described -- you've</p> <p>14 discussed another method is a correspondence</p> <p>15 study. How would you describe a correspondence</p> <p>16 study?</p> <p>17 A In a correspondence study -- like an</p> <p>18 example of a correspondence study would also be in</p> <p>19 a labor market where the researcher creates</p> <p>20 resumes that are based on the information on real</p> <p>21 resumes, but they're changed. And they are</p> <p>22 changed in a way that they have the same</p>

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<p>1 information -- they're versions of the resumes      2 that have the same information on everything other      3 than information about either the race or the      4 gender, if that's what you're trying to test for,      5 of the applicant.</p> <p>6 And the researcher sends out the resumes      7 to jobs that are selected in a representative way.      8 And then the call-back rates are measured and      9 compared between the resumes that signal, you know,      10 that the job applicant is male or female or African      11 American or white or whatever the differences are      12 that they are trying to test for.</p> <p>13 Q Have you used correspondence studies to      14 test for discrimination?</p> <p>15 A I have not myself, no.</p> <p>16 Q Are you aware of any correspondence      17 studies that measure discrimination in      18 contracting?</p> <p>19 A I'm not.</p> <p>20 Q Did you conduct such a study here?</p> <p>21 A No.</p> <p>22 Q If you were to design a study to measure</p>	<p>1 similar in all substantive ways other than that      2 one was by a minority-owned business and one was a      3 white-male-owned business. And you could actually      4 have them actually bid on contracts and then      5 measure the rates at which those paired-up      6 businesses who had similar bids but were only      7 different in the ownership structure -- identity      8 of the owner, and measure the rates at which they      9 received contracts.</p> <p>10 Q I take it one of the benefits you see in      11 a correspondence study is the fact that you can      12 essentially control for, you know, all relevant      13 factors -- have two resumes that are identical,      14 for instance, except for the race or gender of the      15 person who is applying. If you are using real      16 business owners, do you think it's possible to do      17 that?</p> <p>18 A So in a correspondence study the one      19 thing you know is you know all the information      20 that is shared with the decision maker because      21 it's on a piece of paper, and so you can assess      22 the information that is shared. And so it gives</p>
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<p>1 discrimination in contracting, correspondence      2 study, how would you do that?</p> <p>3 A Again, I'd want to study the specifics      4 of the bidding process, but once I understood      5 that, I think I would design bids that could be      6 submitted where the bids were the same in all      7 substantive ways other than a signal of the -- you      8 know, whether the owner was from a racial minority      9 group or not, and I would measure the rates at      10 which those bids were accepted.</p> <p>11 Q Again, can you think of -- you talk      12 about designing bids, so that's based on false      13 information, not actual bids. Can you think of a      14 way to do a correspondence study that wouldn't      15 require submitting false information as part of      16 that study?</p> <p>17 A Again, I haven't planned out the study,      18 so I haven't gone through all the specifics of the      19 logistics, but I think you probably could recruit      20 businesses to submit real bids. And you could      21 probably work with them to make sure the bids were      22 similar and paired in ways that the bids were</p>	<p>1 you a better chance of trying to hold constant the      2 information that the decision maker receives than      3 in another setting.</p> <p>4 Q So you could imagine a scenario in which      5 you think you could design such a study, a      6 correspondence study, and measure whether there's      7 discrimination in contracting nationwide?</p> <p>8 A I wasn't asked to design a study like      9 that, so I haven't spent the time to think through      10 all of the logistical details and look into all      11 the issues of feasibility. But I think it is      12 possible that something like that could be done.      13 But I can't say for sure without, you know, going      14 through all the details of trying to plan it out.</p> <p>15 Q How would you describe a field      16 experiment?</p> <p>17 A A field experiment refers to a situation      18 where a researcher randomly assigns something, but      19 does it in the field as opposed to in a      20 laboratory. So it's something that takes place      21 within the context of a particular market      22 operating.</p>

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<p>1     Q   Can you give an example of one? I'm  2   just not sure exactly what you mean.</p> <p>3     A   So there are examples by -- so a  4   researcher named John List has done a series of  5   field experiments where he would go to markets --  6   like some of the studies that he did took place in  7   markets where people were trading baseball cards,  8   buying and selling and trading baseball cards. So  9   he ran experiments randomly assigning the types of  10   bids that he would offer to different sellers, and  11   he designed the variation in the way that he would  12   bid and the way that -- or the way that people  13   would negotiate to try and test for different  14   forms of discrimination.</p> <p>15    Q   Have you used field experiments to test  16   for discrimination?</p> <p>17    A   No.</p> <p>18    Q   Are you aware of any field experiments  19   that measure discrimination in contracting?</p> <p>20    A   I don't believe so.</p> <p>21    Q   Did you conduct such a study here?</p> <p>22    A   No.</p>	<p>1   where there is either randomization or something  2   that approximates randomization that happens not  3   as a result of the researcher choosing to  4   randomize, but that happens because of something  5   -- some part of a process that happens naturally.</p> <p>6     Q   Can you give an example of a natural  7   experiment?</p> <p>8     A   So there's lots of different types of  9   natural experiments. Some natural experiments are  10   for situations where you are, for instance, trying  11   to measure the effect of going to a particular  12   type of college on future earnings. And let's say  13   you know the way that the college makes decisions  14   about how to choose who to admit and they have  15   some score that they give students, and everyone  16   above a certain threshold gets in and everyone  17   below that threshold does not get in. That's a  18   research design that's called a regression  19   discontinuity. And that by looking at people just  20   above and just below that threshold, you get  21   applicants who are very similar. They just, one,  22   happen to fall just on one side of the threshold</p>
<p>1     Q   And again, how would you design such a  2   study, if you were to do so, to measure  3   discrimination in contracting nationwide?</p> <p>4     A   It's not something that I've thought  5   through, so I -- I don't know exactly how I would  6   do it. There's lots of ways one can design field  7   experiments, so I think if somebody were to put  8   their mind to it and be creative, there probably  9   are field experiments that could be run that would  10   be informative. But I have not thought that  11   through.</p> <p>12    Q   So you think it would be feasible  13   potentially to use a field experiment to study  14   discrimination in contracting?</p> <p>15    A   When you say I think it could be  16   feasible, I haven't -- I'm not -- I can't be sure  17   one way or the other, but I think it would be  18   feasible.</p> <p>19    Q   Okay. You've also listed a natural  20   experiment as another alternative method. How  21   would you describe a natural experiment?</p> <p>22    A   So a natural experiment is something</p>	<p>1   versus just on the other side of the threshold,  2   but they end up with very different outcomes.  3   Some got into the college and some didn't. And so  4   that variation is not exactly the same as random  5   assignment but it is -- it mimics random  6   assignment but it's naturally occurring. So  7   that's an example of a natural experiment. Others  8   are -- well, I could -- I teach a whole class on  9   this, so I could talk about this for a long time.  10   We don't have to go into it now.</p> <p>11    Q   That's fine.</p> <p>12    A   There's other types of variation that  13   are not the same as random assignment but that  14   are -- that have features that are similar to  15   random assignment and that you can use to measure  16   the causal effect of some variable or another.</p> <p>17    Q   Have you used natural experiments to  18   test for discrimination before?</p> <p>19    A   I don't believe I have.</p> <p>20    Q   Okay. Are you aware of any natural  21   experiments that measure discrimination in  22   contracting?</p>

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<p>1     A It's a hard question to answer. I  2 don't -- I'm not aware of a natural experiment  3 that somebody has used to measure discrimination  4 in contracting. The nature of natural experiments  5 is that they exist out in the wild and the  6 researcher goes and finds them. So there may be  7 natural experiments that one could use to measure  8 and try to test for discrimination in contracting.  9 I just -- I'm not -- I didn't do a search on this,  10 so I can't say one way or another, but I'm not  11 aware of a study that has used natural experiments  12 to try to test for the presence of discrimination  13 in contracting.</p> <p>14    Q Just to be clear, you said you didn't  15 search for one and you also didn't conduct one  16 here. Is that accurate?</p> <p>17    A That's correct.</p> <p>18    Q I could ask how would you design such a  19 study or I guess how would you search for such a  20 study if, as you say, you sort of find them in the  21 wild?</p> <p>22    If you were trying to use a natural</p>	<p>1     A I think that's fair. Yeah.  2     Q How would you describe a marginal  3 outcome test?</p> <p>4     A So the idea of a marginal outcome test  5 is that -- so one idea in economics is that  6 decisions are made on the margin, and so one  7 implication of a market that has discrimination  8 versus one that does not have discrimination is  9 that in a market where there is discrimination at  10 work, you might expect to see differences in  11 success rates or the productivity of the marginal  12 people from the discriminated group versus the  13 non-discriminated group that were selected.</p> <p>14     If there's nondiscrimination then when you  15 are looking at the marginal people selected or  16 businesses selected, you should not see differences  17 in their outcomes. That's different from whether  18 you should expect to see average differences;  19 because, on average, there could be other factors  20 that determine, you know, production or success.</p> <p>21     But once you -- if you can isolate your focus to  22 people who are selected on the margin, the last ones</p>
<p>1 experiment to test for discrimination in contracting  2 nationwide, what would you be looking for?</p> <p>3     A I would -- there are different ways to  4 try to find natural experiments, but one way is to  5 try to learn as much as you can about underlying  6 institutions and details of the market that you  7 are trying to study. And sometimes in doing that  8 research you can learn about changes in rules that  9 have happened or other things that generate  10 variation and how decisions are made or selections  11 are made, and that can sometimes uncover a natural  12 experiment.</p> <p>13     So I would -- I would start by trying to  14 learn as much as I could about, you know, different  15 features of the contracting market to try to find  16 whether there was a natural experiment that could be  17 used to try to test for discrimination.</p> <p>18     Q And if you're -- what you're testing for  19 is whether there's discrimination in contracting  20 nationwide, you would need to find a number of  21 those natural experiments out in the wild, so to  22 say, correct?</p>	<p>1 to be selected, that is a way of essentially holding  2 constant other factors. And it basically asks  3 whether the threshold for selection is higher for  4 members of one group than for another.</p> <p>5     Q And have you used marginal outcome tests  6 to assess for discrimination?</p> <p>7     A The test that I described earlier is  8 related to a marginal outcome test. I think it's  9 a bit different, but it's related. It's also  10 based on this idea of decisions being made on the  11 margin.</p> <p>12     Q I'm sorry. Which test are you talking  13 about that you described earlier?</p> <p>14     A The paper we were talking about earlier  15 that's based on the Becker model of  16 discrimination.</p> <p>17     Q Okay. You said it's related to a  18 marginal outcomes test, but not purely so?</p> <p>19     A Yeah. I mean --</p> <p>20            MR. ROSMAN: Objection to the form of the  21 question. Go ahead.</p> <p>22            THE WITNESS: I wouldn't say it was</p>
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1 exactly a marginal outcome test, but it's also not 2 totally different from marginal outcome tests. So 3 which -- I didn't want to say that I've never done 4 marginal outcome tests because someone could argue 5 that that is a version of a marginal outcome test, 6 even though it's not exactly the same.	1 used any of these methods that you've described, 2 starting with audit studies and the ones we've 3 just discussed? 4 A I don't know. I mean I -- I couldn't 5 name a specific one that has used any of these 6 methods.
7 BY MS. DINAN:	7 MS. DINAN: Okay. Next, I want to start
8 Q Are you aware of any marginal outcome 9 tests that measure discrimination in contracting?	8 going through Dr. Wainwright's report and the 9 specific criticisms of that. I'm happy to move on, 10 but we've been going about an hour, so we can start
10 A I don't know.	11 that and then take a lunch break; or if folks would 12 prefer, we could take a lunch break now since it's a 13 good breaking point.
11 Q Did you conduct such a test here?	14 (Whereupon, at 12:36 p.m., a luncheon 15 recess was taken.)
12 A No.	16 * * * * *
13 Q Do you think it's feasible to use a 14 marginal outcome test to measure discrimination in 15 contracting?	17
16 A I think it could be.	18
17 Q How would you design such a study?	19
18 A Well, again, I'd have to know more about 19 the way selections were made in different 20 contexts, put if one could do that background 21 research and figure out ways of isolating who were 22 the sort of last marginal selections for contracts	20 21 22
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1 from the different groups and then measure some 2 form of success rate, that would be something that 3 could be done to test for whether the bar or 4 threshold that is being used for selection is 5 different for minority-owned versus 6 nonminority-owned businesses.	1 A F T E R N O O N S E S S I O N 2 (1:34 p.m.) 3 W H E R E U P O N , 4 J O N A T H A N G U R Y A N 5 was called for continued examination, and having 6 been previously duly sworn, was examined and 7 testified further as follows: 8 E X A M I N A T I O N B Y C O U N S E L F O R D E F E N D A N T 9 C O N T I N U E D
7 Q Do you think you could use a marginal 8 outcome test to test for discrimination in 9 contracting nationwide?	10 B Y M S . D I N A N :
10 A Again, I haven't planned out an entire 11 study, so I don't know for sure, but there's 12 nothing that tells me that that would be 13 impossible.	11 Q Now, I want to discuss Dr. Wainwright's 12 expert report and the critiques you've made of 13 that. Did you read Dr. Wainwright's expert report 14 that was submitted in this matter?
14 Q Would you envision that that would 15 involve running multiple marginal outcome tests if 16 that's what you were testing for?	15 A I did. 16 (G U R Y A N E x h i b i t N u m b e r 2 w a s m a r k e d f o r 17 i d e n t i f i c a t i o n .)
17 A It would depend on the specifics of 18 exactly how you would have to run the test, which 19 I haven't figured out because it's not something 20 that I was asked to plan a whole study on.	18 B Y M S . D I N A N :
21 Q Okay. Are you aware of any disparity 22 studies that have ever been done that have ever	19 Q I'm going to introduce it as an exhibit 20 just in case we need to refer to it. I'm not sure 21 we will but bear with me. 22 Did you read all the appendices to

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<p>1 Dr. Wainwright's report?</p> <p>2 A I believe so if what -- you mean the</p> <p>3 appendix tables?</p> <p>4 Q Yes. It should now be available as a</p> <p>5 marked exhibit if you want to refer to it, but you</p> <p>6 are welcome to look at the copy you have if that's</p> <p>7 easier.</p> <p>8 A Well, one thing I'm noticing is that it</p> <p>9 says corrected April 22nd. So I have seen the</p> <p>10 version that was dated April 4th, but I don't</p> <p>11 believe I've seen a version that was corrected on</p> <p>12 April 22nd.</p> <p>13 Q Understood. This version corrects some</p> <p>14 typographical errors we just shared with</p> <p>15 plaintiff's counsel earlier this week. We'll</p> <p>16 refer to this one, but if you want to go ahead and</p> <p>17 skim through it, it is substantively exactly the</p> <p>18 same. It has all the same sections and substance</p> <p>19 and tables.</p> <p>20 A I'll only be able to answer based on the</p> <p>21 one that I've seen, and I -- unless you want me to</p> <p>22 read through all 223 pages of this now, I won't be</p>	<p>1 that is of the type that Dr. Wainwright reviewed</p> <p>2 in this report that is for the purpose of</p> <p>3 justifying the existence of a disadvantaged</p> <p>4 business enterprise program or other contracting</p> <p>5 program of that type, then no.</p> <p>6 Q Have you ever read any reports or</p> <p>7 guidelines about how you should conduct a</p> <p>8 disparity study?</p> <p>9 A I have read some of the legal decisions</p> <p>10 that are referred to in Dr. Wainwright's report.</p> <p>11 I've read like the uniform guidelines from the</p> <p>12 EEOC, which is not related to the disparity study</p> <p>13 but to, you know, guidelines for conducting</p> <p>14 analyses related to claims of discrimination and</p> <p>15 the use of employment screens. I'm not sure</p> <p>16 whether I've read other guidelines.</p> <p>17 Q You mentioned some of the legal</p> <p>18 decisions referred to in the report. Which legal</p> <p>19 decisions did you review?</p> <p>20 A I haven't read them recently, so I'm not</p> <p>21 sure I will be able to list them. But I, in the</p> <p>22 course of my experience as a researcher, I have</p>
<p>1 able to.</p> <p>2 Q I do not need you to do that. If you</p> <p>3 need to refer to it, but I understand that you</p> <p>4 looked at the previous version.</p> <p>5 Did you review the data that was the part</p> <p>6 Dr. Wainwright's report that was produced by the</p> <p>7 defendants?</p> <p>8 A I did review the data that</p> <p>9 Dr. Wainwright produced, yes.</p> <p>10 Q You mentioned that you did some analysis</p> <p>11 on this data to determine whether you had all of</p> <p>12 the data. Did you determine that you had all the</p> <p>13 data that you needed?</p> <p>14 A I guess I'm not sure. I believe I have</p> <p>15 the dataset that Dr. Wainwright relied upon. If</p> <p>16 that's true, then I have the data.</p> <p>17 Q Have you ever performed a disparity</p> <p>18 study for any federal, state, or local government?</p> <p>19 A No.</p> <p>20 Q Have you ever performed a disparity</p> <p>21 study at all?</p> <p>22 A If by a disparity study you mean a study</p>	<p>1 read some of the -- like the Croson decision I</p> <p>2 believe. I can't remember if there are others.</p> <p>3 But I have seen them.</p> <p>4 Q Okay. Have you ever performed any</p> <p>5 research involving the availability of</p> <p>6 minority-owned businesses?</p> <p>7 A I don't -- I don't believe so.</p> <p>8 Definitely not for the purpose of calculating</p> <p>9 anything like a disparity index of the type that</p> <p>10 is reported in the reports that -- or the studies</p> <p>11 that Dr. Wainwright performed?</p> <p>12 Q Have you ever performed any research</p> <p>13 involving the ability of minority-owned businesses</p> <p>14 to perform work?</p> <p>15 A I don't believe so.</p> <p>16 Q Have you ever performed any research</p> <p>17 involving business formation generally?</p> <p>18 A I don't believe so. I'm trying to think</p> <p>19 whether it is a part of some of the research that</p> <p>20 I've done, but I -- but not specifically where</p> <p>21 that was the topic of the study.</p> <p>22 Q What is your understanding of what</p>

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<p>1 you able to identify any variable that you believe      2 should have been controlled for by Dr. Wainwright      3 that affected the average outcomes of the groups      4 that he was measuring that he did not control for?</p> <p>5 A As you said, he's conducted multiple      6 analyses that ask different questions using      7 different datasets, so could you be more specific?</p> <p>8 Q Well, why don't we talk -- I guess we      9 can take them one by one. No. We'll get to that      10 later on.</p> <p>11 Let's talk about first the disparity      12 studies that Dr. Wainwright reviewed. In your      13 report you've said that based on your own review,      14 many of the disparity studies that Dr. Wainwright      15 included in his analysis contained flaws that make      16 conclusions regarding the presence or absence of      17 discrimination in relevant markets inappropriate.</p> <p>18 Did you review all 205 disparity studies      19 that Dr. Wainwright reviewed?</p> <p>20 A I didn't review every single one.</p> <p>21 I'm sorry, Michael, I can't hear you.</p> <p>22 MR. ROSMAN: I'm sorry about that. I</p>	<p>1 looked through the majority of them, not all 200      2 of them, but more than half. And I -- you know,      3 they are done by different consulting firms or      4 entities and the methods that each firm tends to      5 use tends to be similar. So I didn't look at all      6 of them once I could see the basic method that      7 each one was using.</p> <p>8 Q Can you provide an example of a      9 disparity study that you think is flawed that was      10 included in the study?</p> <p>11 A You know, I listed some of them in my      12 report. I think it's footnote 22 of the -- let me      13 look to be sure that that is correct. Yes.</p> <p>14 Footnote 22. So, for instance, the Mason Tillman      15 study of St. Louis done April 2015, when it's      16 calculating the disparity index, it doesn't      17 control for any factor to assess whether there are      18 other factors besides discrimination that may      19 account for different rates of utilization      20 relative to availability, and it doesn't control      21 for capacity, which is one potential factor, but      22 there could be others.</p>
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<p>1 muted myself. I object to the form. Go ahead.</p> <p>2 BY MS. DINAN:</p> <p>3 Q How many the 205 disparity studies do      4 you think contain flaws that make their      5 conclusions inappropriate?</p> <p>6 A I couldn't tell you a specific number of      7 how many, but the methods that they used to      8 calculate disparities in the disparity index that      9 they report that Dr. Wainwright summarizes in his      10 summary of the 205 studies, many of them don't      11 control for anything other -- any other factor      12 other than whether the business was owned by a      13 minority or not.</p> <p>14 And so to conclude from a -- any statistic      15 of that set of studies that there is discrimination      16 without -- when many, if not all of them, don't      17 control for any factor other than the race of the      18 business owner is inappropriate.</p> <p>19 Q How many of the 205 studies did you      20 review?</p> <p>21 A I don't know off the top of my head the      22 exact number, but I -- I would say I reviewed -- I</p>	<p>1 You know, the studies done by NERA that      2 Dr. Wainwright was -- I believe he was involved in,      3 if not all of them, the majority of them, he said      4 himself that in the calculation of the disparity      5 index, he doesn't control for in any way differences      6 in capacity across different types of firms.</p> <p>7 But even in addition to that, the      8 disparity indices report in the NERA studies don't      9 control for or consider any factor other than      10 discrimination as a potential or possible      11 explanation for the disparity index being less than      12 one.</p> <p>13 Q So you've mentioned the NERA studies. I      14 don't recall exactly how many there are in here.      15 And you've mentioned -- I think there are three      16 specific studies in footnote 22.</p> <p>17 Can you identify other specific studies      18 that you believe are flawed?</p> <p>19 A We could go through other Mason Tillman      20 studies. We could go through other studies by      21 BBC. They use similar methods. These are just      22 examples that I listed. I didn't -- in my review</p>

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<p>1 disparity indexes that the disparities were caused  2 by discrimination because other factors were  3 considered.</p> <p>4 I don't know that it would be possible,  5 given the data that was available, to have  6 controlled for enough in a regression sense to  7 come to that conclusion. That goes back to my  8 earlier criticism of the use of regression to try  9 to test for discrimination.</p> <p>10 There are specific variables that I did  11 mention in my report that are the types of things  12 that could cause disparities that are not the  13 result of discrimination in the federal  14 contracting market. For instance, differences in  15 bidding choices that participants make or  16 differences in the size or capacity of businesses  17 who are participating in the market and their  18 ability to bid or take on contracts of different  19 size or the number of contracts or awards. Those  20 are just some.</p> <p>21 I'm not saying that if you were able to  22 control for those two things that then that would</p>	<p>1 control for bidding behavior?</p> <p>2 A My criticism is of the conclusions that  3 Dr. Wainwright drew based on the analysis that he  4 did. And what I'm saying is that he has not  5 considered or at least not controlled for  6 nondiscriminatory factors, one of which might be  7 differences in bidding behavior.</p> <p>8 Dr. Wainwright doesn't know, or at least  9 hasn't offered an opinion, that bidding behavior is  10 the same among the participants in this market. And  11 without knowing that, you can't rule out the  12 possibility that the disparities are the result of  13 differences in bidding behavior.</p> <p>14 Q But if Dr. Wainwright believed there  15 were no differences in bidding behavior based  16 on -- businesses based on the race of the business  17 owner, then it wouldn't be inappropriate for him  18 to fail to control for that, right?</p> <p>19 MR. ROSMAN: Objection to the form of the  20 question. Go ahead.</p> <p>21 THE WITNESS: I disagree. First of all,  22 Dr. Wainwright has not stated the assumption that</p>
<p>1 necessarily be enough, but my criticism is that  2 Dr. Wainwright draws a conclusion about  3 discrimination based on analyses that don't  4 consider those and any other nondiscriminatory  5 factors that might explain the disparity.</p> <p>6 BY MS. DINAN:</p> <p>7 Q You mentioned bidding choices earlier so  8 let's talk about that again because I asked if you  9 were aware of any evidence of differences in  10 bidding behavior based on the race of the business  11 owner and -- (technical difficulties.)</p> <p>12 MR. ROSMAN: Christine, somewhere during  13 the course of that question, your voice was breaking  14 up. So maybe you could try it again, please.</p> <p>15 BY MS. DINAN:</p> <p>16 Q Let's talk about bidding choices. You  17 mentioned earlier if I asked if you were aware of  18 any evidence that there were differences in  19 bidding behavior by businesses based on the race  20 of the business owner. As I recall, you weren't  21 aware of any such evidence. So I guess my  22 question is why do you think it's important to</p>	<p>1 he's making -- if he's making the assumption that  2 bidding behavior is the same, that's an assumption  3 that he has not stated he's relying on that for his  4 opinion. It's an assumption that he's relying on  5 that he has not stated. He hasn't done an analysis  6 to support that that assumption is correct.</p> <p>7 And furthermore, if -- my -- my -- as I  8 described earlier, my opinion is that if you see a  9 disparity, in order to draw a conclusion that that  10 disparity is cause for discrimination, you need to  11 consider the possibility that other factors other  12 than discrimination might have caused it and ruled  13 those out.</p> <p>14 Dr. Wainwright might believe that there  15 are no differences in bidding behavior, but if you  16 were to just assume that, then the analysis is  17 only as good as that assumption. But that  18 assumption might not be right, and he hasn't done  19 any analysis to show or test whether that  20 assumption is correct.</p> <p>21 BY MS. DINAN:</p> <p>22 Q When you publish a study do you</p>

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<p>1 typically include a description of all the      2 variables you did not include and why you didn't      3 include them?</p> <p>4 A When I publish a study I discussed the      5 assumptions that must be made to interpret the      6 estimates in the way that I interpret them.</p> <p>7 Q That wasn't my question.</p> <p>8 A Well, it is an answer to your question.</p> <p>9 Sometimes that is about -- those assumptions are      10 what variables must be controlled for in order to      11 draw the conclusion that I draw. Oftentimes when      12 I do research I have a research design that makes      13 it so that I don't have to control for every      14 variable out there because I think trying to      15 control for all sorts of factors of the types we      16 are talking about can be hard to make sure that      17 you control for everything.</p> <p>18 That's why oftentimes in my research I      19 rely on random assignment, which makes it so that      20 the thing that I'm measuring the effect of is not      21 correlated with all sorts of other things that would      22 be hard to control for, which means that you don't</p>	<p>1 Q But sitting here today, you are not      2 aware of any evidence to suspect that a factor      3 like bidding behavior could have caused the      4 disparity.</p> <p>5 A As I've said many times,      6 Dr. Wainwright's results are -- he's shown      7 evidence of some disparities. He hasn't      8 considered nondiscriminatory factors or      9 discrimination in other markets in history. And      10 so because of that, he can't tell the difference      11 from his results or shouldn't be able to tell the      12 difference from his results whether the disparity      13 is caused by current discrimination or something      14 else.</p> <p>15 Q But you can't testify that including      16 bidding behavior in his analysis would have      17 changed his results in any way or that it      18 definitely biased his results?</p> <p>19 A I cannot say what would have happened if      20 he had controlled for a variable that he didn't      21 control for, and neither can Dr. Wainwright. And      22 that's the reason why it's inappropriate for</p>
<p>1 have to control for them. That's the power of      2 random assignment in a research design. Other times      3 I rely on natural experiments that serve a similar      4 purpose.</p> <p>5 Q Just to be clear -- I want to make sure      6 I understand your testimony -- you were not aware      7 of any reason to suspect that bidding choices or      8 bidding behavior does differ based on the race of      9 the business owner, but your criticism is based on      10 the fact that Dr. Wainwright did not address this      11 one way or the other in his report.</p> <p>12 A I just -- your question is based on a      13 premise that has the logic of statistical analysis      14 backwards. The way a statistical analysis works      15 is you state a null hypothesis, and then you test      16 whether that null hypothesis can be rejected.</p> <p>17 And so what I'm saying is that it's      18 inappropriate to draw the conclusion from the      19 statistical analysis that the null hypothesis of no      20 discrimination can be rejected without considering      21 the possibility that some other factor might have      22 caused the disparity.</p>	<p>1 Dr. Wainwright to come to a conclusion that the      2 disparity is the result of discrimination as      3 opposed to something else when neither of us know.</p> <p>4 Q Well, in considering factors that you      5 think he should have controlled for and he didn't,      6 where does that come from? How do you pick      7 bidding behavior out of the universe of possible      8 factors as opposed to anything else?</p> <p>9 A It comes from, you know, an      10 understanding -- as an economist -- an      11 understanding of how, you know, the market works;      12 and there are choices that have to be made and      13 different factors that can affect outcomes. As an      14 analyst who is studying the market, it's a      15 responsibility of the researcher or analyst to      16 learn about the market enough and consider factors      17 other than the one that you are trying to test      18 for. And my opinion is that Dr. Wainwright didn't      19 consider other factors.</p> <p>20 In some of his analyses he didn't consider      21 any other factors. In some of his analyses he      22 considered some, but as I've described in my report,</p>

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<p>1 differences in the capacity.</p> <p>2 How many of the 205 studies that</p> <p>3 Dr. Wainwright reviewed do you believe failed to</p> <p>4 control for firm size or capacity?</p> <p>5 A I don't know exactly how many, but many</p> <p>6 of them.</p> <p>7 Q How would you measure capacity?</p> <p>8 A In the context of calculating a</p> <p>9 disparity index?</p> <p>10 Q No. In the context of determining the</p> <p>11 capacity of a business?</p> <p>12 A So I couldn't tell you a specific</p> <p>13 variable that I would use. This is not a -- I was</p> <p>14 not -- you know, I didn't design a disparity index</p> <p>15 or a disparity study myself here, so I haven't</p> <p>16 gone through all the details of figuring out the</p> <p>17 exact specifics of how I would try to control for</p> <p>18 capacity.</p> <p>19 The idea would be to try to control for</p> <p>20 differences in the size of firms and features of</p> <p>21 firms that allow them to take on projects of</p> <p>22 different size and different numbers of projects at</p>	<p>1 saying that the study should have controlled for</p> <p>2 capacity. If the goal of the study was to measure</p> <p>3 disparity without trying to draw a conclusion</p> <p>4 about whether that disparity was caused by</p> <p>5 discrimination, then it may not have been</p> <p>6 necessary to control for capacity.</p> <p>7 What my opinion is is that given that many</p> <p>8 of the studies don't control for capacity, it's</p> <p>9 inappropriate to draw a conclusion based on the</p> <p>10 calculations of disparities from those studies that</p> <p>11 there was discrimination.</p> <p>12 Q Okay. You don't have an opinion as to</p> <p>13 the correct way to measure capacity in that</p> <p>14 context?</p> <p>15 A No, I don't. I don't have a full</p> <p>16 solution of how one should fully control for</p> <p>17 capacity. I think it's difficult, and partly</p> <p>18 because it is difficult, it's inappropriate to</p> <p>19 draw a conclusion that the disparity is the result</p> <p>20 of discrimination as opposed to capacity, which is</p> <p>21 either not measured or hard to measure.</p> <p>22 Q A few moments ago you mentioned size of</p>
<p>1 the same time. That, you know, measuring that may</p> <p>2 be difficult, so I'm not sure I have an obvious</p> <p>3 solution about the way that I think that that should</p> <p>4 be done.</p> <p>5 But my criticism is different. My</p> <p>6 criticism is not -- my criticism is that when one</p> <p>7 sees the disparity that does not fully or at all</p> <p>8 control for capacity, it's inappropriate to draw a</p> <p>9 conclusion that that disparity is the result of</p> <p>10 discrimination as opposed to differences in</p> <p>11 capacity.</p> <p>12 Q Okay. So I understand it, your</p> <p>13 criticism is that capacity should have been</p> <p>14 controlled for and was not, but you don't have an</p> <p>15 opinion as to the appropriate way to measure</p> <p>16 capacity.</p> <p>17 A I wouldn't agree with that quite in the</p> <p>18 way that you said it. What I would say is that</p> <p>19 it's inappropriate to draw a conclusion about</p> <p>20 discrimination given the way that capacity either</p> <p>21 was not controlled for or controlled for</p> <p>22 insufficiently. Your question suggested that I'm</p>	<p>1 the firm is potentially relevant to this. Do you</p> <p>2 believe that firms can vary their size based on</p> <p>3 demand?</p> <p>4 A I believe that they can do that to some</p> <p>5 extent. I don't believe that's unlimited, and I</p> <p>6 believe it's costly. And I believe it's costly to</p> <p>7 do so quickly. And the fact there are differences</p> <p>8 in firm size can contribute to differences in the</p> <p>9 likelihood that firms will bid on contracts and</p> <p>10 also could contribute to the likelihood that they</p> <p>11 might receive or win a bid if decisions about who</p> <p>12 wins bids are based on beliefs by the decision</p> <p>13 maker about whether the firm is going to be able</p> <p>14 to deliver on the contract that they bid on.</p> <p>15 Q If you were attempting to measure</p> <p>16 capacity how would you account for this, you know,</p> <p>17 the fact that firms can change their size based on</p> <p>18 demand?</p> <p>19 A That's one of the reasons why measuring</p> <p>20 capacity is difficult, as I said earlier. But</p> <p>21 that's also one of the reasons why, because it's</p> <p>22 difficult to measure, it's inappropriate to draw a</p>

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<p>1 conclusion based on a disparity that doesn't fully      2 control for capacity that there is discrimination.      3 Q Did you perform any calculations to      4 determine the effects of differences in a firm's      5 capacity, if they existed, would have on      6 Dr. Wainwright's analysis?</p> <p>7 A I did not.</p> <p>8 Q Did you attempt to recalculate any of      9 the disparity indexes in the reports that      10 Dr. Wainwright reviewed accounting for capacity?</p> <p>11 A No.</p> <p>12 Q Do you believe that any differences in      13 the capacity between minority-owned and      14 nonminority-owned firms could be influenced by      15 discrimination?</p> <p>16 A I believe that to the extent there's      17 differences in capacity between minority- and      18 nonminority-owned firms, that can be the result of      19 discrimination in some form. That's a different      20 question than whether it is the result of      21 discrimination in the contracting -- federal      22 contracting market, and it's also a different</p>	<p>1 Q In your report you describe a      2 hypothetical industry in which there are many      3 smaller businesses and few -- very few large      4 businesses, and the few large businesses are      5 nonminority-owned. This is on page 19 of your      6 report, but I'm just paraphrasing.</p> <p>7 You note that if businesses in this      8 industry bid for contracts that are proportionate to      9 their size and contracts are awarded at equal rates      10 to every business that bids for a contract, the      11 ratio of utilization to availability will be lower      12 for minority than nonminority businesses.</p> <p>13 My question is what evidence do you have      14 that businesses bid on contracts proportionate to      15 their size?</p> <p>16 MR. ROSMAN: I'm going to ask to have just      17 the question, the last sentence, read back. I      18 didn't really hear it.</p> <p>19 (Whereupon, the Reporter read the record      20 as requested.)</p> <p>21 MR. ROSMAN: I'm going to object to the      22 form of the question then. Go ahead.</p>
<p>1 question from whether it is the result of current      2 versus historical discrimination.</p> <p>3 Q Okay. But what if the question is just      4 if there is discrimination in the contracting      5 market nationwide and discrimination of any type?</p> <p>6 A Again, I refer to discrimination outside      7 of the contracting market. So the fact that there      8 are differences in capacity, to the extent that      9 that's true, that could be the result of      10 discrimination outside of the federal contracting      11 market. It could be the result of discrimination      12 in markets that happened in the past. It could be      13 the result of other factors. Without an analysis      14 of that, you know, it's not appropriate to draw      15 conclusions about discrimination in the      16 contracting market.</p> <p>17 Q Have you performed any tests or analysis      18 to determine whether there is -- whether      19 differences in capacity of minority- and      20 nonminority-owned firms are influenced by      21 discrimination?</p> <p>22 A I haven't.</p>	<p>1 THE WITNESS: So I'm -- this part of the      2 report that you're pointing to, I'm describing a      3 hypothetical example to make -- to illustrate the      4 broader point that without controlling for or      5 considering the role that capacity might play in      6 determining utilization relative to availability,      7 it's inappropriate to draw a conclusion that the      8 difference in the ratio of utilization to      9 availability is caused by discrimination. And this      10 is a hypothetical example that would be one      11 situation where capacity would play a role that none      12 of -- sorry, I won't say none -- that many of the      13 studies that Dr. Wainwright relied on don't adjust      14 for.</p> <p>15 And so my opinion is that a summary of      16 all of those studies that include at least some      17 that don't adjust for differences in capacity      18 can't appropriately lead to a conclusion that the      19 disparity and utilization is the result of      20 discrimination.</p> <p>21 BY MS. DINAN:</p> <p>22 Q I understand it's a hypothetical, but my</p>

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<p>1 question is do you have any evidence that      2 businesses bid on contracts proportionate to their      3 size? Are you aware of any evidence of that?</p> <p>4 A I can't think of a study off the top of      5 my head that says one way or the other, but I      6 haven't seen an analysis by Dr. Wainwright showing      7 that it's not true.</p> <p>8 Q Do you recall that capacity is a static      9 notion?</p> <p>10 A No. I think firms grow and shrink over      11 time, and they make investments that can change      12 their capacity.</p> <p>13 Q Some other criticisms you've made of the      14 disparity studies in your report, you contend that      15 the disparity study that is published by a state      16 or local government as support for a particular      17 DBE program is likely to show disparities that the      18 program is intended to remedy.</p> <p>19 That's on page 15 of your report. What is      20 the basis for this assertion?</p> <p>21 A My understanding from Dr. Wainwright's      22 report and his deposition is that the way he got</p>	<p>1 be aware of those either.</p> <p>2 Q You don't have any actual evidence      3 that's in fact true, that those studies -- you      4 know, studies were not published because they      5 didn't show disparities, correct?</p> <p>6 A I couldn't name a specific study, no.</p> <p>7 I'm talking about the logic of the way that the      8 studies become published so that Dr. Wainwright      9 gets access to them well.</p> <p>10 Q Did you review each of the 205 disparity      11 studies that Dr. Wainwright reviewed to determine      12 whether there were disparities overall in the      13 utilization of minority-owned businesses in each      14 of those studies?</p> <p>15 A I did not redo Dr. Wainwright's      16 calculations.</p> <p>17 Q That wasn't my question. My question      18 was did you review them specifically to determine      19 whether there were any studies that did not find      20 any disparities?</p> <p>21 A I don't believe there are any studies in      22 Dr. Wainwright's sample that show no disparities</p>
<p>1 these 205 studies is that these are the ones that      2 have been published by the entities that are      3 running DBE programs. And I'm raising the      4 possibility that if the DBE program exists, that      5 means it has been justified. And if there are      6 other studies that have been done that didn't show      7 disparities and led to DBE programs not existing,      8 then it's possible that Dr. Wainwright wouldn't      9 see those studies because those studies wouldn't      10 ever be made public.</p> <p>11 Q Are you aware of any published studies      12 that show that there were no disparities over all?</p> <p>13 A Sorry. The point of my answer to the      14 last question is that the studies that don't find      15 any disparities overall might not ever be      16 published.</p> <p>17 Q I understand. You are saying might. I      18 guess I'm saying are you aware of any studies that      19 were not published because they did not show      20 disparities?</p> <p>21 A I am not aware of those, and my point is      22 that I would expect that Dr. Wainwright might not</p>	<p>1 in any of the markets or submarkets that they      2 evaluated. But that's a different point from the      3 point I'm making in the section of the report that      4 you are asking about.</p> <p>5 Q Right. I think there are two separate      6 questions. One is whether there were any that      7 were not published because they didn't have      8 disparities. We talked about that.</p> <p>9 The other is whether, of the studies in      10 the sample, the 205 studies in the sample, is it      11 your understanding that each of those studies had a      12 finding -- and I'm not asking about specific      13 markets -- that they all -- each of those studies      14 had results that show that there were disparities      15 overall in the utilization of minority-owned      16 businesses?</p> <p>17 A I did not see any that didn't show any      18 disparity at all such that it would -- could be      19 used to justify the existence of a DBE program.</p> <p>20 Q You also criticized Dr. Wainwright's      21 analysis of disparities in the industry that      22 plaintiff operates in is not specific enough</p>

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<p>1 essentially. What is your understanding of the 2 industry in which the plaintiff ultimately 3 operates?</p> <p>4 A My understanding is that the plaintiff 5 provides what is referred to as administrative 6 and/or technical support in particular to the US 7 Department of Agriculture and contractors of the 8 US Department of Agriculture to -- yeah.</p> <p>9 Q Have you tested for disparities in the 10 administrative and technical support industries?</p> <p>11 A I have not.</p> <p>12 Q Have you tested for the existence of 13 discrimination in that industry?</p> <p>14 A I have not.</p> <p>15 Q If you were to design a study to do so, 16 how would you measure whether there is 17 discrimination in all those industries?</p> <p>18 A So I wasn't asked to design a study to 19 test for that. So it's not something that I've 20 planned out and come up with all the details on, 21 so I don't think I could do that off the top of my 22 head.</p>	<p>1 background research what datasets include 2 six-digit NAICS codes versus other NAICS codes. I 3 don't know as I sit here that I could say for sure 4 or confidently.</p> <p>5 Q You've said that both professional 6 services and general services, two of the industry 7 categories used by Dr. Wainwright, include 8 numerous types of contracts and firms that are 9 outside of the relevant contracts at issue in this 10 matter. And you provide an example of what you 11 mean.</p> <p>12 A If you -- it would be hard for me to do 13 it off the top of my head without looking at the 14 details of all the different types of businesses 15 that are included in those NAICS codes. But I 16 listed some of them in my report that there are -- 17 that those NAICS codes are broad enough that they 18 include types of businesses that are fairly 19 different from performing services and work that 20 are fairly different from what the plaintiff does.</p> <p>21 Q Can you refer to me where in the report 22 you are referring to where you've given those</p>
<p>1 Q Let's drill down a little more bit 2 specifics, though. You talked about the NAICS 3 codes specific to Ultima's industries. If you 4 were just looking to test -- and I understand you 5 don't have a specific study design in mind -- but 6 to test for discrimination in Ultima's industries, 7 would you only look at data reported at the 8 six-digit NAICS code level.</p> <p>9 And for the court reporter that's 10 N-A-I-C-S.</p> <p>11 A It's a hard hypothetical to answer 12 because I haven't planned out the study that I 13 wasn't asked to plan out. So I can't say for sure 14 exactly how I would conduct the study.</p> <p>15 Q So you don't have an opinion on that 16 today?</p> <p>17 A No.</p> <p>18 Q Are you aware of any available datasets 19 that look at industries at a six-digit NAICS 20 level?</p> <p>21 A That's not something I could answer off 22 the top of my head without doing a little bit of</p>	<p>1 examples?</p> <p>2 A I'm not sure I can find every single 3 place, but, for instance, on page 21 I am 4 referring to two-digit NAICS codes. For instance, 5 NAICS code 56 includes travel agents, 6 telemarketing firms, security and investigation 7 firms, locksmiths, janitorial services firms, 8 landscaping firms, and waste management firms.</p> <p>9 Q Do you know if these firms are being 10 included in professional services and/or general 11 services as Dr. Wainwright used them?</p> <p>12 A I've not memorized all of the NAICS 13 codes in my preparation, so I'm not a hundred 14 percent sure; but I believe that those would be in 15 general services.</p> <p>16 Q Do you believe that a company can pivot 17 to different types of work if demand shifts?</p> <p>18 A I do believe that companies can shift 19 what they do to some extent as demand shifts. I 20 don't believe that that ability is unlimited, and 21 I believe that it can be costly. And that will 22 vary depending on the business and, you know,</p>

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<p>1 with lawyers is a little dangerous. But if you  2 were talking about contracting and meaning federal  3 contracting that people bid on -- businesses bid  4 on, and now I think you've changed it to mean  5 something much broader that involves anything that  6 could be called a contract in law school.</p> <p>7 Q I'm not trying to trick you. I'm trying  8 to understand what you mean by this criticism. So  9 as you drafted that portion of your report, were  10 you referring to earnings generated only through  11 contracting with the government?</p> <p>12 A What I meant was that the ACS does not  13 allow Dr. Wainwright or anybody to distinguish  14 between revenues that a small business owner  15 receives through federal contracting with the  16 government or through any other source. It's just  17 what are their earnings.</p> <p>18 Q Okay. And you are not aware of any  19 dataset that distinguishes at that level of  20 granularity, correct?</p> <p>21 A I'm certainly not testifying that there  22 doesn't exist a dataset of that type, but I</p>	<p>1 And I want to talk specifically about what he did  2 control for are and what you think he should have  3 controlled for.</p> <p>4 So I'm talking now about -- starting on  5 page 58 of his report -- the qualifications and  6 capacities model, if you want to take a look at  7 that. And let's talk about the variables that  8 Dr. Wainwright did control for starting with his  9 qualifications model.</p> <p>10 Do you recall what those variables were?  11 Take a moment to look at the report.</p> <p>12 A So they include educational attainment,  13 age, geographic location. Those are the ones I  14 remember off the top of my head. I believe those  15 are the qualifications-related factors.</p> <p>16 Q And that is correct, not that this was a  17 quiz. But based on the report itself. What  18 factors do you believe were omitted from the  19 qualifications model that Dr. Wainwright should  20 have included?</p> <p>21 A I couldn't possibly come up with a full  22 list, which is exactly the point of the criticism</p>
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<p>1 couldn't tell you off the top of my head a dataset  2 that would -- that would distinguish.</p> <p>3 Q Okay. You also contend because the ACS  4 data is not limited to individuals involved in  5 federal contracting or seeking federal contracts,  6 the analyses in section four of Dr. Wainwright's  7 report cannot be used to support a conclusion that  8 disparities, much less discrimination, exists in  9 the market for federal contracting. Do they  10 support a conclusion that disparities exist in the  11 market represented by the data?</p> <p>12 A So the ACS is from a random sample of  13 all adults in the United States. And so when, you  14 know, Dr. Wainwright calculates unadjusted  15 differences in earnings, that does show a  16 disparity in earnings between African Americans  17 and whites.</p> <p>18 Q Now, I'm going to get a little more  19 specific. You criticized, we talked about I think  20 more broadly, the regression analyses that Dr.  21 Wainwright performed in section IV-D of his report  22 as only controlling for a limited set of factors.</p>	<p>1 that I levied earlier about using data like the  2 American community survey to try to test for  3 discrimination.</p> <p>4 Q But you have listed some in your report.  5 You've listed a number of variables you are going  6 to potentially control for, right? I think on  7 page 23 and 24 you've listed some, starting with  8 college major, occupation, industry; is that  9 right?</p> <p>10 A I believe that's right, but I'm trying  11 to find where in my report that you're -- I see at  12 bottom of page 23 and the top page 24.</p> <p>13 Q My pages were off. The bottom of  14 page 23? Okay. Do you believe that these are  15 examples of factors that Dr. Wainwright should  16 have included?</p> <p>17 A That would not be how I would  18 characterize it. My criticism is that because he  19 did not control for those factors and other  20 factors, it's inappropriate to conclude that the  21 disparity that he measures, even after adjusting  22 for what he does adjust, is caused by</p>

<p style="text-align: right;">Page 186</p> <p>1 discrimination as opposed to these factors or 2 other factors that he didn't control for. 3 Q Again, my question -- I want to get a 4 little bit more understanding why these factors in 5 particular were ones that you identified. 6 Are you aware of data, for example, that 7 includes the college major of business owners? 8 A So the reason why I listed these is that 9 these were some that I thought of. This is not 10 meant to be an exhaustive list of every variable 11 that Dr. Wainwright should have controlled for. 12 Part of the point of the criticism is that a 13 dataset like the American community survey is 14 likely not to have variables that measure factors 15 that would need to be controlled for in order to 16 make it appropriate to draw a conclusion of 17 discrimination. So there -- and that is the point 18 of the criticism in the National Academy of 19 Sciences report and those other studies that I 20 referred to. 21 So there will be variables that would need 22 to be controlled for to make it appropriate to draw</p>	<p style="text-align: right;">Page 188</p> <p>1 of becoming a business owner who runs a business 2 that contracts with the federal government. There 3 could be others. 4 But my point is that Dr. Wainwright didn't 5 do an analysis of whether these and other factors 6 contributed to the disparity in earnings or the 7 likelihood of being self-employed. And so because 8 he didn't do that analysis, it's inappropriate for 9 him to draw a conclusion that the disparity that he 10 measures is the result of discrimination. 11 Q Are you aware of any evidence suggesting 12 there are differences between the races on average 13 as to the college major chosen? 14 A There are studies that show differences 15 in college major by race and by gender. I 16 couldn't cite the specific statistics off the top 17 of my head, but there are studies that document 18 those differences. 19 Q Was it possible that any of those 20 differences might have been the result of 21 discrimination? 22 A It is possible that some of those</p>
<p style="text-align: right;">Page 187</p> <p>1 a conclusion of discrimination that are not in the 2 American community survey and are likely not in 3 other datasets that would be easily available to a 4 researcher. 5 Q You've identified these specific 6 variables -- and I guess, you know, drilling down 7 on it a little bit -- for failure to include a 8 variable to have -- to result in omitted variable 9 bias, which is one of your critiques as I 10 understand it, it needs to, as you testified, do 11 two things, contribute to the outcome and be 12 correlated with the variable of interest, right? 13 A Yes. 14 Q So I guess what evidence do you have 15 that success in contracting has anything to do 16 with college major? 17 A I couldn't point you to a specific study 18 that shows that college major is related to 19 success in contracting, but it wouldn't surprise 20 me as a labor economist that there might be a 21 relationship. You know, engineering, for 22 instance, could be correlated with the likelihood</p>	<p style="text-align: right;">Page 189</p> <p>1 differences were the result of discrimination in 2 an educational testing. It's possible that they 3 were the result of discrimination in earlier -- 4 earlier in children's lives. It's possible that 5 they were the result of discrimination that 6 affected those children's parents and grandparents 7 historically. All those things are possible. 8 But again, Dr. Wainwright hasn't done an 9 analysis, and he hasn't done an analysis of whether 10 these differences in these variables or any other 11 variables besides the ones that he happened to 12 control for are the reasons for differences in the 13 outcomes that he measured. And so as a result it's 14 inappropriate to draw a conclusion that those 15 differences are caused by discrimination. 16 Q Do you have any evidence that success in 17 contracting has anything to do with the occupation 18 of the business owner? 19 A I'd give the same answer that I gave 20 about the college major. 21 Q Are you aware of any evidence suggesting 22 that there are differences between race and</p>

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<p>1 occupation, average differences?</p> <p>2 A I believe there are differences in the</p> <p>3 distribution of occupations on average by race,</p> <p>4 but I couldn't give you a cite of a specific</p> <p>5 study. I looked at labor market data a lot</p> <p>6 myself.</p> <p>7 Q Is it possible that any differences</p> <p>8 might have been caused by discrimination?</p> <p>9 A I'd give the same answer that I would</p> <p>10 give for college major.</p> <p>11 Q What do you mean by "industry" as a</p> <p>12 potential variable that needs to be controlled</p> <p>13 for?</p> <p>14 A Well, in this analysis what</p> <p>15 Dr. Wainwright is calculating is differences in</p> <p>16 either earnings or the likelihood of being</p> <p>17 self-employed or earnings among the self-employed,</p> <p>18 but for the earnings in particular. The earnings</p> <p>19 vary across industry that people work in, and if</p> <p>20 there are differences in the industry that African</p> <p>21 American and white workers work in, that could be</p> <p>22 the reason for differences in earnings, and that</p>	<p>1 these variables predict success in contracting.</p> <p>2 What's relevant is they predict the outcomes that</p> <p>3 Dr. Wainwright is analyzing in this regression.</p> <p>4 Q Fair enough. So a similar question.</p> <p>5 But you've already testified you believe there are</p> <p>6 differences in earnings, that those vary across</p> <p>7 industry. I guess I'm still having a little bit</p> <p>8 of a hard time understanding how you are defining</p> <p>9 industry. But you are saying that in a regression</p> <p>10 trying to measure the impact on business owner --</p> <p>11 or measure the outcome of business-owner earnings,</p> <p>12 you need to control for the industry that that</p> <p>13 business owner is in; is that correct?</p> <p>14 A Again, I'm not endorsing the method that</p> <p>15 Dr. Wainwright used of using a regression to try</p> <p>16 to measure these -- measure discrimination. So I</p> <p>17 actually don't think that there's a way to --</p> <p>18 within the method that Dr. Wainwright used, I</p> <p>19 don't think that there's a way to solve the</p> <p>20 problem. That's the heart of the critique from</p> <p>21 the National Academy of Sciences, that the problem</p> <p>22 is the method and the data source.</p>
<p>1 could be the result of nondiscriminatory factors.</p> <p>2 Q Do you have any evidence that success in</p> <p>3 contracting varies by industry as you've described</p> <p>4 it?</p> <p>5 A Well, it's certainly the case that</p> <p>6 success in contracting varies by industry because</p> <p>7 there's more contracting in some industry than</p> <p>8 others. But I guess I don't understand the</p> <p>9 question.</p> <p>10 And just to clarify my earlier answers,</p> <p>11 Dr. Wainwright, in the analyses that I think we're</p> <p>12 talking about, because we're talking about the ACS</p> <p>13 data, isn't analyzing any outcomes related to</p> <p>14 contracting. He's looking at earnings among all</p> <p>15 workers, and he's looking at the share of workers</p> <p>16 who are self-employed, and then he's looking at</p> <p>17 earnings among the self-employed. None of those</p> <p>18 outcomes measure success in contracting.</p> <p>19 So, you know, if what you're asking me is</p> <p>20 a question that's related to my criticism about</p> <p>21 omitted variables bias, it's not really relevant for</p> <p>22 the analysis that Dr. Wainwright did whether any of</p>	<p>1 But when I'm talking about industry here,</p> <p>2 for industry in particular, I'm referring more to</p> <p>3 the analyses that Dr. Wainwright did on earnings</p> <p>4 that are not just business earnings. He has</p> <p>5 analyses that are earnings among people that are</p> <p>6 self-employed or not self-employed. And average</p> <p>7 earnings vary across the industry that workers work</p> <p>8 in.</p> <p>9 The American community survey is a survey</p> <p>10 of individuals. It's not a survey of businesses.</p> <p>11 And individuals report on that survey what industry</p> <p>12 they work in.</p> <p>13 Q Is it possible that any differences in</p> <p>14 earnings by industry might have been caused by</p> <p>15 discrimination?</p> <p>16 A It is possible that discrimination can</p> <p>17 contribute to differences in the industry that</p> <p>18 African American and white workers work in.</p> <p>19 That's possible. It's possible that some of that</p> <p>20 discrimination is discrimination that happened far</p> <p>21 in the past, or some of that discrimination is</p> <p>22 discrimination that affected these workers when</p>

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<p>1 they were children. Yes. But some of the  2 differences in industry are the result of  3 nondiscriminatory factors, like choices in what  4 job people want to take.</p> <p>5 Q We've already talked about quality  6 schooling, so I'll skip over that one. But you've  7 also mentioned parents' socioeconomic background.  8 So you are contending that the socioeconomic  9 background of the parents of a worker could have  10 an impact on the earnings of an individual; is  11 that correct?</p> <p>12 A Yes.</p> <p>13 Q Do you believe that it's possible that  14 any differences caused by parents' socioeconomic  15 background could themselves have been caused by  16 discrimination?</p> <p>17 A I think the differences in the  18 socioeconomic background of black and white  19 children when they are adults certainly could have  20 been the result of discrimination in the past that  21 affected their parents or even their grandparents.</p> <p>22 Q You also mentioned the desire to be</p>	<p>1 happened, but I can say that the failure to  2 consider the possibility that these and other  3 variables could be the reason for the disparities,  4 whether unadjusted or adjusted, that  5 Dr. Wainwright measured, you know, the failure to  6 control for them makes it -- the failure to  7 control for them and the failure to consider that  8 they might be the explanation, makes it  9 inappropriate to draw the conclusion that the  10 disparity is the result of discrimination.</p> <p>11 Q But you are not able to testify  12 definitively whether omitting any of these  13 variables biased his results, are you?</p> <p>14 A No.</p> <p>15 Q Other than the variables we've talked  16 about that are on pages 23 and 24 of your report,  17 are there any other variables that you believe,  18 including the ones we talked about earlier today,  19 any other variables that you think Dr. Wainwright  20 should have included but did not in his analysis?</p> <p>21 MR. ROSMAN: Objection to the form of the  22 question. Go ahead.</p>
<p style="text-align: center;">Page 195</p> <p>1 self-employed. How would you measure the desire  2 to be self-employed?</p> <p>3 A I'm not sure I could measure the desire  4 to be self-employed. But my point is that if one  5 can't control for the interest in or the choice to  6 be self-employed that you can't rule out that  7 variation, and that could be the explanation for  8 differences in self-employment rates as opposed to  9 discrimination.</p> <p>10 Q Are you aware of any evidence that  11 suggests that the desire to be self-employed  12 differs among individuals of different races?</p> <p>13 A Not that I can point to, no.</p> <p>14 Q Did you run a regression analysis that  15 included any of these variables that you believe  16 should have been controlled for by Dr. Wainwright?</p> <p>17 A I didn't run any regressions for the  18 purpose of this matter.</p> <p>19 Q So I take it you are not able to testify  20 as to the impact that omitting these variables had  21 on the results, if at all?</p> <p>22 A I can't say specifically what would have</p>	<p style="text-align: center;">Page 197</p> <p>1 THE WITNESS: I disagree with the premise  2 of the question. As I've said several times over  3 the course of today I don't think that there's a way  4 that Dr. Wainwright could have corrected his  5 analysis, given that he was running a regression  6 with the dataset that he had, to make it so it would  7 have been appropriate to draw a conclusion of  8 discrimination based on the disparities that he  9 measured for the reason that is laid out by the  10 National Academy of Sciences. I can come up with a  11 list of variables that, you know, could potentially  12 be explanations for differences.</p> <p>13 There are likely others and probably  14 others that I haven't thought of. But the problem  15 is that many of the factors that may contribute to  16 differences other than discrimination are likely  17 not to be in the dataset that Dr. Wainwright would  18 use to run a regression. And so that's why  19 running a regression to test for discrimination is  20 a flawed method.</p> <p>21 BY MS. DINAN:</p> <p>22 Q Lastly, I just want to talk a little bit</p>

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<p>1 about the capacities model that Dr. Wainwright  2 ran. And that's on page 59 in his report. I want  3 to talk about the variables he controlled for  4 there.</p> <p>5 Do you recall what those variables were,  6 what he controlled for?</p> <p>7 A Well, I can read them from my report,  8 which I think is a quote from Dr. Wainwright's  9 report. They include indicators of individual  10 financial assets, family structure, mobility,  11 immigration status, military status (veteran),  12 local macroeconomic conditions by state.</p> <p>13 Q And what factors do you believe were  14 omitted from the capacities model that  15 Dr. Wainwright should have controlled for but did  16 not?</p> <p>17 A Well, all of the factors that we just  18 went through.</p> <p>19 Q Okay. Any others?</p> <p>20 A You know, I haven't put the missing  21 variables into categories like Dr. Wainwright did  22 of qualifications and core capacities. So I'm</p>	<p>1 and didn't. That's not my testimony. My  2 testimony is that because he can't control for  3 many factors that could contribute to disparities,  4 it's inappropriate to draw a conclusion that the  5 disparity is caused by discrimination.</p> <p>6 I'm not offering an opinion about what  7 other variables in the American community survey  8 Dr. Wainwright should have included. My opinion is  9 that there's likely lots of variables that aren't in  10 the American community survey that might have  11 contributed to the outcome. And because those  12 variables might have contributed to the outcome, it  13 is inappropriate to draw the conclusion that the  14 differences in the outcomes were the result of  15 discrimination.</p> <p>16 Q To be clear, I'm not limiting this  17 question to variables that are in the American  18 community survey. You have said there are other  19 variables that might have impacted the outcome  20 that were not controlled for. And I guess I'm  21 just trying to understand what you think those  22 were.</p>
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<p>1 thinking of any other factor other than the ones  2 that he's controlled for that might impact  3 earnings or the decision to be self-employed or  4 the earnings of self-employed workers. And you  5 know, I listed some of them here that we went  6 through and described.</p> <p>7 I'm certainly not testifying that those  8 are the only things that are missing. My testimony  9 is that there are probably lots of other things that  10 could be missing. I don't know that I could come up  11 with a long list of them right now at the end of the  12 day.</p> <p>13 Q So sitting here today, those are the  14 only ones that you explicitly identifying. You  15 have not identified any others. I understand you  16 may if given more time to think about, but sitting  17 here today, are there any other variables that  18 come to mind that you believe he should have  19 controlled for and did not?</p> <p>20 A Again, I just -- I just -- you've  21 mischaracterized my testimony multiple times as  22 being about whether he should have controlled for</p>	<p>1 So we've talked about a number of them.  2 My question is, sitting here today, are there any  3 others you believe might have impacted the variation  4 in earnings or the desire -- or self-employment or  5 the desire to be self-employed -- not the desire to  6 be self-employed -- or self-employment earnings,  7 that Dr. Wainwright did not include in his analysis?</p> <p>8 A There certainly are lots of other  9 factors that affect people's earnings that are not  10 on that list. You know, I'm not going to try to  11 list every single one of them. But I know I can't  12 list every factor that can affect somebody's  13 earnings. Opportunities are made available to  14 them, the teachers that they meet in their lives,  15 the amount of pollution they are exposed to. You  16 know, things that happen that affect the stress  17 level in their families. There's many, many  18 factors that ultimately affect somebody's earnings  19 eventually.</p> <p>20 Again, I could go on, but some of those  21 are things that you might be able to control for in  22 a dataset. Others are factors that you are very</p>

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<p>1 unlikely to be able to control for in a dataset.</p> <p>2 But regardless, because there are factors that could</p> <p>3 be the reason for differences in outcomes, it makes</p> <p>4 it very difficult, if not impossible, to test for</p> <p>5 discrimination without being able to control for all</p> <p>6 of those nondiscriminatory factors or factors that</p> <p>7 are affected by discrimination in the market that</p> <p>8 you are not trying to test for.</p> <p>9 Q Just to be clear you have listed some</p> <p>10 additional variables. You have not run a</p> <p>11 regression analysis or any other test using any of</p> <p>12 these variables to determine whether they would</p> <p>13 change Dr. Wainwright's results, have you?</p> <p>14 A I have not.</p> <p>15 MS. DINAN: I think this is a good place</p> <p>16 for a break. I've got one more section. I might</p> <p>17 get through it in time after the break for you to go</p> <p>18 into your questions if you have any, Michael. I</p> <p>19 know we're getting later into the afternoon.</p> <p>20 (Whereupon, a brief recess was taken.)</p> <p>21 BY MS. DINAN:</p> <p>22 Q Before the break we were discussing</p>	<p>1 And so specifically, do I think that</p> <p>2 weather on the day that the bids were made is</p> <p>3 something that is a variable that is likely to</p> <p>4 explain disparities? No, I don't. So I don't</p> <p>5 think that's something -- omitting that variable</p> <p>6 is likely not a problem. That's not what my</p> <p>7 opinion is about.</p> <p>8 BY MS. DINAN:</p> <p>9 Q Do you think he needed to explain in his</p> <p>10 report, why he was omitting that variable?</p> <p>11 A Again, my criticisms are not about the</p> <p>12 variables that Dr. Wainwright decided to control</p> <p>13 for or decided not to control for. My criticisms</p> <p>14 are about, given what he chose to control for and</p> <p>15 the analyses that he chose to run, my criticism is</p> <p>16 about the conclusions that he drew from the</p> <p>17 analysis.</p> <p>18 If he thought that, you know, the weather</p> <p>19 on the date the bid was submitted was an important</p> <p>20 variable, then he should have discussed that. I</p> <p>21 don't think it was. I don't think that's something</p> <p>22 that would affect the reasonable conclusions one can</p>
<p>1 various variables that may have affected the</p> <p>2 outcome of Dr. Wainwright's analysis that he</p> <p>3 should have controlled for.</p> <p>4 Do you think he should have controlled for</p> <p>5 the weather on the day off bid was made?</p> <p>6 MR. ROSMAN: Objection to the form of the</p> <p>7 question. You may answer.</p> <p>8 THE WITNESS: Sorry. I got a little</p> <p>9 distracted because you told me to tell you if anyone</p> <p>10 came in. My dog walked in.</p> <p>11 MS. DINAN: Fair enough. I saw your dog</p> <p>12 in the background.</p> <p>13 Could you read back the question?</p> <p>14 (Whereupon, the Reporter read the record</p> <p>15 as requested.)</p> <p>16 THE WITNESS: So again, I'll object to the</p> <p>17 premise of the question. I didn't -- I tried to</p> <p>18 explain earlier that I'm not -- my opinion is not</p> <p>19 about what Dr. Wainwright should or should not have</p> <p>20 controlled for. My opinion is about the conclusions</p> <p>21 he should have drawn from the analysis that he did</p> <p>22 given what he did control for.</p>	<p>1 draw from his analyses. So I don't think it's</p> <p>2 something that we would have to talk about.</p> <p>3 But given that there are factors that</p> <p>4 affect the outcomes that he's measuring that could</p> <p>5 explain the disparities that Dr. Wainwright has not</p> <p>6 controlled for, it's inappropriate to draw a</p> <p>7 conclusion from that analysis that discrimination is</p> <p>8 the reason for the disparity as opposed to some</p> <p>9 factor.</p> <p>10 Q Right. So as a researcher you've said</p> <p>11 that if there's an outcome that you think has no</p> <p>12 bearing on -- I'm sorry -- a variable that has no</p> <p>13 bearing on the outcome on your results, you both</p> <p>14 wouldn't control for it and wouldn't explain why</p> <p>15 you are not controlling for it.</p> <p>16 Isn't it possible that that's what</p> <p>17 Dr. Wainwright did here with the variables that he</p> <p>18 did not include?</p> <p>19 MR. ROSMAN: Objection to form.</p> <p>20 THE WITNESS: I don't agree with your</p> <p>21 characterization of my advice about how to do</p> <p>22 research. I don't think that's a fair</p>

Page 206	Page 208
<p>1 characterization of what I've said or I believe.</p> <p>2 But I'll say it again.</p> <p>3 My criticism is with the conclusions</p> <p>4 that Dr. Wainwright drew. He chose to do a</p> <p>5 particular analysis. He chose to use a particular</p> <p>6 set of methods. He chose to analyze a particular</p> <p>7 set of data, and he chose to include some control</p> <p>8 variables. And he drew a conclusion based on that</p> <p>9 analysis. And what I'm saying is that, given the</p> <p>10 analysis that he chose to do, the conclusion is</p> <p>11 not warranted.</p> <p>12 BY MS. DINAN:</p> <p>13 Q I understand. You've also testified</p> <p>14 today about omitted variable bias, and you believe</p> <p>15 because certain variables were omitted, it may</p> <p>16 have biased Dr. Wainwright's results.</p> <p>17 We talked a little bit about process and</p> <p>18 why you would include some variables and not include</p> <p>19 other variables. And you've indicated that if a</p> <p>20 researcher fails to include a variable in their</p> <p>21 analysis, they need to explain that -- explain that</p> <p>22 that's their assumption essentially -- I'm</p>	<p>1 discrimination that might explain the disparity that</p> <p>2 you are measuring.</p> <p>3 In some of Dr. Wainwright's analyses he</p> <p>4 doesn't control for any other factors. There it</p> <p>5 seems very clear to me, and I hope clear to others,</p> <p>6 that it's inappropriate to draw a conclusion that</p> <p>7 discrimination was the reason for the disparity if</p> <p>8 you don't control for anything else.</p> <p>9 In some of his analyses he's controlled</p> <p>10 for some variables, but there are other factors that</p> <p>11 he hasn't controlled for, and because he hasn't</p> <p>12 controlled for some other factors that might cause</p> <p>13 the disparity, it's always inappropriate to draw a</p> <p>14 conclusion of discrimination in that analysis as</p> <p>15 well.</p> <p>16 Now, omitted variables bias is one of the</p> <p>17 reasons why it's inappropriate to draw that</p> <p>18 conclusion, but I haven't said anything about when</p> <p>19 his -- it's appropriate to explain or not explain</p> <p>20 what variables you've controlled for or not</p> <p>21 controlled for. My opinion is about what conclusion</p> <p>22 is appropriate given the analysis that one has done.</p>
<p>1 paraphrasing, so if you think I'm mischaracterizing,</p> <p>2 you can correct me -- then it's important -- if a</p> <p>3 variable has been included because you think it</p> <p>4 doesn't impact your outcome, that that's part of</p> <p>5 your assumptions, then that's something that needs</p> <p>6 to be explained in your report.</p> <p>7 But if a researcher thinks that a</p> <p>8 variable, any number of variables in the world that</p> <p>9 could be controlled for, will have no bearing on the</p> <p>10 outcome of the results, they wouldn't necessarily</p> <p>11 put that in their report, correct?</p> <p>12 A You have mischaracterized my beliefs and</p> <p>13 mischaracterized my testimony today. I didn't say</p> <p>14 when somebody should or shouldn't explain why they</p> <p>15 did or didn't control for a variable. I don't</p> <p>16 believe that you can find anywhere in my testimony</p> <p>17 today where I said anything about that.</p> <p>18 What I've said is, given the set of</p> <p>19 variables that you choose to control for, you need</p> <p>20 -- if you are testing for discrimination, you need</p> <p>21 to assess whether there are potentially other</p> <p>22 factors that you haven't controlled for other than</p>	<p>1 Q Okay. Let's move on. I'd like to talk</p> <p>2 now about Mr. Chow's report. Did you review Mr.</p> <p>3 Chow's expert report that was submitted in this</p> <p>4 matter?</p> <p>5 A I did.</p> <p>6 MS. DINAN: I'm going to introduce it as</p> <p>7 an exhibit.</p> <p>8 (GURYAN Exhibit Number 3 was marked for</p> <p>9 identification.)</p> <p>10 BY MS. DINAN:</p> <p>11 Q It should now be available as Exhibit 3.</p> <p>12 A I see the file. Yes. This appears to</p> <p>13 be the report that I reviewed.</p> <p>14 BY MS. DINAN:</p> <p>15 Q Okay. Did you review all the tables in</p> <p>16 Mr. Chow's report?</p> <p>17 A I did.</p> <p>18 Q Did you review the data that was a part</p> <p>19 of that report?</p> <p>20 A I reviewed the dataset that Mr. Chow</p> <p>21 made available to -- that I received.</p> <p>22 Q Okay. Did you make a determination as</p>

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<p>1 to whether you had all of the data that he relied 2 on?</p> <p>3 A As I explained in my report, I have a 4 dataset that has the same number of observations 5 that Mr. Chow reports are in his analysis dataset. 6 I was not given the original data that Mr. Chow 7 manipulated to create his analysis dataset. I was 8 only given the -- a dataset that I believe is the 9 analysis dataset that has the same number of 10 observations that Mr. Chow reports.</p> <p>11 Q What is your understanding of what 12 Mr. Chow's report is intending to show?</p> <p>13 A I guess I don't know what it's intending 14 to show. I know what Mr. Chow reported doing and 15 the conclusions that he drew from it. He analyzed 16 data from two different datasets. The -- one is a 17 dataset that includes businesses that registered 18 for the federal government for contracting 19 purposes, and the other is a dataset that includes 20 information on awards that were given through the 21 federal procurement system. And he ran logic 22 progressions to relate to the likelihood of --</p>	<p>1 BY MS. DINAN: 2 Q Okay. You said you were provided with 3 the data that Mr. Chow used, right? 4 A I was provided with the data that I 5 believe is the analysis dataset that has the same 6 number of observations. I believe it is the 7 dataset that Mr. Chow used but I -- because I 8 don't have the computer programs that he used, I 9 can't -- I haven't been able to confirm that it is 10 actually the dataset that he used to produce the 11 results that he reports.</p> <p>12 Q But using that dataset would you be able 13 to perform a similar analysis as to what Mr. Chow 14 did and determine the odds ratios of various small 15 businesses being awarded a contract?</p> <p>16 MR. ROSMAN: Objection to the form of the 17 question. Go ahead.</p> <p>18 THE WITNESS: I do not believe it's 19 possible to use the dataset that I was provided to 20 measure the likelihood that different types of 21 businesses were awarded contracts because there's -- 22 the variable that indicates whether businesses</p>
<p>1 well, to relate a dependent variable, which I 2 believe doesn't measure the thing that he intends 3 it to measure relating that to different 4 characteristics of the small businesses that are 5 in his dataset.</p> <p>6 Q Have you conducted a statistical 7 analysis to determine odds ratios before?</p> <p>8 A I have.</p> <p>9 Q And do you believe that Mr. Chow 10 accurately calculated odds ratios here?</p> <p>11 MR. ROSMAN: Objection to the form of the 12 question.</p> <p>13 THE WITNESS: I can't say one way or the 14 other for a couple reasons. One is I asked for but 15 I didn't receive the computer code that Mr. Chow 16 used to run his analyses, so I don't know exactly 17 how he did all of his calculations; and he doesn't 18 describe it in a way that makes it -- makes me sure 19 that I know exactly what he did. So I can't say one 20 way or another whether he calculated the odds ratios 21 correctly or not.</p>	<p>1 received awards shows in that dataset that every 2 business in the dataset received either an award or 3 an IDV -- so I don't believe there's any business in 4 the dataset that received no type of contract from 5 the federal government.</p> <p>6 BY MS. DINAN: 7 Q Even assuming that's true, would you be 8 able to replicate the analysis as Mr. Chow 9 performed it using that data?</p> <p>10 A I don't know for sure. I don't have his 11 computer code, so I can't be confident that I 12 could replicate the analysis that he performed. 13 And without the computer code I can't know exactly 14 what analysis that he actually performed to 15 produced those results.</p> <p>16 Q If you were given the computer code that 17 Mr. Chow used, do you believe you would be able to 18 replicate his analysis?</p> <p>19 A If I was given the computer code that 20 Mr. Chow used, I could check whether I could 21 replicate his analysis, but I can't say one way or 22 the other what I would find.</p>

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<p>1 controlling for in his report. Yes.</p> <p>2 Q Do you recall what those variables were?</p> <p>3 A They are variables like the corporate</p> <p>4 structure of the business and the level of</p> <p>5 confidential or top secret clearance of the</p> <p>6 business; the size of the business measured by</p> <p>7 employment or revenues; how old the business is;</p> <p>8 whether the business owner is a veteran, disabled</p> <p>9 veteran; and then whether the business is in the</p> <p>10 8(a) program or not; whether the business is woman</p> <p>11 owned or minority owned. I believe there might be</p> <p>12 some others.</p> <p>13 Q Were you able to identify any variable</p> <p>14 that you believe should have been controlled for</p> <p>15 by Mr. Chow that might have affected the average</p> <p>16 outcomes of the group he was measuring that he did</p> <p>17 not control for?</p> <p>18 A Again, I'll just have to correct that.</p> <p>19 I'm not offering an opinion about what someone</p> <p>20 should or should not have controlled for. I'm</p> <p>21 offering an opinion about whether the conclusion</p> <p>22 based on the analysis that was run, that the</p>	<p>1 result of discrimination as opposed to something</p> <p>2 else like potential differences in the bids that</p> <p>3 are submitted and the frequency with which</p> <p>4 businesses submit bids.</p> <p>5 Q And if you were to, how would you</p> <p>6 measure bidding behavior of businesses?</p> <p>7 A You would need data on the frequency</p> <p>8 with which businesses in the sample submitted</p> <p>9 bids, and what their bids were. Ideally, you</p> <p>10 would want other features of the bids to hold</p> <p>11 constant the -- what they were proposing to do in</p> <p>12 the work.</p> <p>13 It might -- you know, exactly what you</p> <p>14 would want to control for would vary depending on</p> <p>15 what type of contract was being bid on and the rules</p> <p>16 of the contracting bid process. But you'd have to</p> <p>17 sort of think through all that and learn all of that</p> <p>18 to design a study that could control those things in</p> <p>19 the right way.</p> <p>20 Q Are you aware of any dataset that</p> <p>21 includes that type of information?</p> <p>22 A There definitely are datasets that</p>
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<p>1 disparity is the result of discrimination as</p> <p>2 opposed to some other factor, is appropriate.</p> <p>3 But with that caveat, as I've described in</p> <p>4 my report, one type of variable that is not</p> <p>5 controlled for in Mr. Chow's analysis is whether</p> <p>6 businesses bid on contracts, the frequency with</p> <p>7 which they bid on -- bid for contracts, or what</p> <p>8 their bids were.</p> <p>9 Q Now, we've discussed bidding behavior</p> <p>10 pretty extensively, but, again, as you've</p> <p>11 testified, I guess, have you seen any evidence</p> <p>12 that there is a difference in bidding behavior and</p> <p>13 the frequency of bidding or the number of bids</p> <p>14 submitted between minority-owned businesses and</p> <p>15 nonminority-owned businesses?</p> <p>16 A I'm not aware of evidence on that. I</p> <p>17 don't know. There might be evidence on that, but</p> <p>18 my opinion is that without controlling for bidding</p> <p>19 behavior and without some knowledge that there</p> <p>20 isn't differences in bidding behavior, it's</p> <p>21 inappropriate to draw the conclusion that the</p> <p>22 differences in rates of winning awards is the</p>	<p>1 include bidding behavior by firms in contracting.</p> <p>2 There are studies that have used a dataset like</p> <p>3 this.</p> <p>4 Q Okay. Have you yourself performed any</p> <p>5 analysis of firms' bidding behavior?</p> <p>6 A I have not myself, no. But I'm aware of</p> <p>7 studies that have.</p> <p>8 Q Okay. Did you attempt to review</p> <p>9 Mr. Chow's analysis with bidding behavior</p> <p>10 included?</p> <p>11 A No.</p> <p>12 Q Why not?</p> <p>13 A I wasn't asked to perform my own</p> <p>14 analysis. I was asked to comment on the methods</p> <p>15 and the conclusions reached by the experts,</p> <p>16 including Mr. Chow, I also believe that the data</p> <p>17 that Mr. Chow shared is fundamentally flawed for</p> <p>18 answering the question, and so I don't believe it</p> <p>19 would have made sense to try to make changes to</p> <p>20 the analysis using that flawed data to answer a</p> <p>21 question about the likelihood of winning</p> <p>22 contracts.</p>

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<p>1 would affect the costs that different firms have  2 and so the likelihood that they could submit low  3 bids -- low-cost bids versus higher-cost bids.  4 And any of those things, to the extent that they  5 were different between minority- and  6 nonminority-owned firms and that those differences  7 were not the result of discrimination in the  8 market that he's testing for discrimination are  9 things that are explanations that he hasn't  10 considered or ruled out.</p> <p>11 Q Just to be clear, you have not done any  12 analysis to determine whether any of these factors  13 actually impacted his analysis, correct?</p> <p>14 A No.</p> <p>15 Q Have you performed any test or analysis  16 to compare the odds of certain small businesses  17 winning federal contracts?</p> <p>18 A I have not.</p> <p>19 Q What about the market in which Ultima  20 provides services? Have you done any analysis of  21 the odds of various small businesses winning  22 contracts there?</p>	<p>1 data at that level, or do you mean look for  2 disparities at that level using micro data that is  3 at the individual business level.  4 Q The latter.  5 A If it's the latter, then there would be  6 more -- I would expect there to be more data  7 points in an analysis at the three-digit NAICS  8 code than a the six-digit NAICS code.  9 Q And when you have very small datasets,  10 would you typically have larger standard errors?  11 A All else equal, the larger the sample  12 size, the smaller the standard errors would be.  13 Q The larger the sample size the smaller  14 the standard error?  15 A All else equal that is true.  16 Q And the smaller the sample size, the  17 larger the standard error. Is the inverse also  18 true? All things equal.  19 A All else equal the larger the sample  20 size, the larger the standard error would tend to  21 be.  22 Q And having a larger standard of error,</p>
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<p>1 A I have not.</p> <p>2 Q You contend that Mr. Chow's analysis of  3 the industry sector is overly broad because -- the  4 industry sector relative to Ultima -- because the  5 data is broken down by a three-digit NAICS code.  6 If you were designing to see whether there  7 are disparities in the market for Ultima's services,  8 what would you do to address that?</p> <p>9 A I'm not sure what I would do. I might  10 design a very different study than Mr. Chow  11 described. I might design a study that used one  12 of the other methods that I talked about earlier  13 today. But my testimony is about the results that  14 are broken down by industry include businesses  15 that do work that is qualitatively different from  16 the work that Ultima does.</p> <p>17 Q If you were to look at industries with a  18 three-digit NAICS code versus the six-digit NAICS  19 code, would you expect there would be more data or  20 less data in the dataset.</p> <p>21 A It depends what you mean by "look at it  22 at that level." Do you mean like aggregate the</p>	<p>1 what does that mean in terms of the inferences  2 that could be drawn from that data?  3 A The larger the standard error, the more  4 imprecise the estimates and the -- again, all else  5 equal, the less likely you'll be able to  6 distinguish differences that would occur by chance  7 from differences that are not by chance.  8 Q But you would expect that there would be  9 more random variation?  10 A Can you be more specific?  11 Q I was just trying to paraphrase. You  12 said that -- you said it's more likely -- less  13 likely that the results can be distinguished from  14 chance. Is that what you said?  15 A If the standard errors are larger, then  16 when you estimate a coefficient in a regression or  17 a difference adjusted -- just difference or a odds  18 ratio, the larger the standard error, the less  19 likely that difference is to be statistically  20 significantly different from zero.  21 So what that means is the more likely you  22 are to find a difference, even if there isn't one in</p>

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<p>1 that the observation either received an award or 2 received an IDV.</p> <p>3 Q Okay. So this is set from the one and 4 the zero, correct?</p> <p>5 A No. They are related because Mr. Chow 6 says that the outcome variable, the dependent 7 variable in his regression is whether a company 8 won an award. And the award or IDV variable has 9 information about whether companies won awards. 10 Those observations that didn't -- that indicate 11 that they -- or those observations that don't 12 indicate they won an award, they indicate the 13 company got an IDV.</p> <p>14 Q I guess what I'm struggling with is 15 isn't it possible that if there's a zero, that 16 indicates -- doesn't that usually indicate the 17 lack of a presence of a variable?</p> <p>18 A It should, but there are no observations 19 in the dataset where there is the lack of an award 20 and a lack of an IDV.</p> <p>21 Q Well, I'm asking about ones or zeros. 22 You said the data was tagged as a one or a zero.</p>	<p>1 A Mr. Chow describes in his report what he 2 calls an analysis dataset that has 5,659,740 3 observations and 64 variables. I received a 4 dataset that also includes 5,659,740 rows or 5 observations and 64 variables. In that dataset 6 that I received, which has the exact same number 7 of observations and exact same number of 8 variables, there's a column which is a variable 9 that is labeled award underscore or underscore 10 IDV. And every single row of the 5,659,740 has 11 entered into that column either the word award or 12 the word -- or the letters IDV. There are no -- 13 none of the 5,659,740 records have any information 14 in that column, that variable, other than either 15 award or IDV.</p> <p>16 MS. DINAN: Okay. Let's take a very short 17 break. I'm almost done. I just want to check a few 18 things in my notes, and then I anticipate we will 19 wrap up shortly thereafter. Can we take ten 20 minutes?</p> <p>21 (Whereupon, a brief recess was taken.) 22</p>
Page 235	Page 237
<p>1 A I'm saying in order to run the logit 2 regression, you need to give Stata a variable that 3 is either a one or a zero. That's the -- the 4 logit is a regression that deals with what's 5 called binary dependent variables. That one or a 6 zero is based on information on whether -- it's 7 information about the outcome that you are trying 8 to measure.</p> <p>9 In this case Mr. Chow says the outcome 10 he's trying to measure is whether a business won an 11 award. And what I'm saying is that if you were to 12 take the dataset that Mr. Chow provided as his 13 analysis dataset and try to split the observations 14 into ones where some won an award and some didn't, 15 there aren't any observations in the dataset that 16 won no award nor won -- sorry. That's not a very 17 clear way to say it. There aren't any observations 18 where a company neither won an award nor won a IDV.</p> <p>19 Q Okay. That's your interpretation of 20 Mr. Chow's data that you received. But you are 21 not certain whether that dataset is what went into 22 the regression?</p>	<p>1 BY MS. DINAN: 2 Q Dr. Guryan, how many datasets were you 3 given for Mr. Chow? 4 A I believe only one. 5 Q Do you recall what it was called? 6 A I wrote the name of it in my report I 7 believe. It is in section 8.3 on page 27 at the 8 bottom of the first paragraph. That's the name of 9 the file. It says awards combined and some other 10 characteristics.</p> <p>11 Q What page of your report are you on? 12 A Page 27 of my report. 13 Q Okay. There is another dataset that you 14 should have been provided with. I'm not sure why 15 you weren't. So we will look into that. I don't 16 think we're going to resolve that today. There's 17 another one -- I'll confirm the title. Mr. Rosman 18 and I will follow up on that. But I don't think 19 there is anything we can do about that sitting 20 here today. But just to confirm you did only 21 receive one dataset for Mr. Chow? 22 A That's my recollection. I'd have to go</p>

## Errata sheet

Jonathan Guryan, deposition of April 27, 2022. In almost all instances, the reason for the change is that the reporter mistranscribed what I said or misspelled a word. I may have misspoken for the correction on page 130.

p. 6, l. 12 – “Willamette” s/b “Willmette”

p. 13, l. 17 – “date” s/b “data”

p. 18, l. 7 – “I believe so” s/b “I don’t believe so”

p. 33, l. 11-12 – “are disparate” s/b “there is a disparity”

p. 40, l. 8 – “the about” s/b “the other about”

p. 51, l. 9 – “report as” s/b “report, as”

p. 76, l. 3 – “regression” s/b “regression results”

p. 84, l. 6 - “has to all” s/b “has to have all”

p. 111, l.10 - “where there actually” s/b “where there are actually”

p. 124, l. 14 – “non discrimination” s/b “no discrimination”

p. 130, l. 10 - “April 4th” s/b “February 4th”

p. 141, l. 8 – “report” s/b “reported”

p. 146, ll. 2-3 - “other factors were considered” s/b “other factors were not considered”

p. 168, l. 9 “them well” s/b “them”

p. 189, l. 2 “testing” s/b “setting”

p. 210, l. 21 “logic” s/b “logistic”

p. 210, l. 22 “progressions” s/b “regressions”

p. 214, l.12 - “Based my” s/b “Based on my”

p. 223, l. 15 “controls” s/b “controlled”

p. 228, l. 19 “larger” s/b “smaller”

p. 233, l. 12 “progression” s/b “regression”

p. 233, l. 16 “progression” s/b “regression”

1       Ultima Services Corporation   v. US Department Of Agriculture  
2       Jonathan Guryan , PhD (#5185100)

## ACKNOWLEDGEMENT OF DEPONENT

4 I, Jonathan Guryan , PhD, do hereby declare that I  
5 have read the foregoing transcript, I have made any  
6 corrections, additions, or changes I deemed necessary as  
7 noted above to be appended hereto, and that the same is  
8 a true, correct and complete transcript of the testimony  
9 given by me.



June 10, 2022

12 Jonathan Guryan , PhD

Date

13 \*If notary is required

14 | SUBSCRIBED AND SWORN TO BEFORE ME THIS

\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_.

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